Distr.
GENERAL

UNCTAD/COM/28
10 December 1993

ENGLISH ONLY

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

THE MINERAL SECTOR IN PERU

A country case study prepared by the UNCTAD secretariat under the project on the role of the mineral sector in the development process of developing countries (MINDEV)

GE.93-54556

THE MINERAL SECTOR IN PERU

TABLE OF CONTENTS

		Page
Summary		1
I.	INTRODUCTION	8
II.	DEVELOPMENT OF THE PERUVIAN ECONOMY	12
	1. Economic development until 1990	12
	1.1 The period until 1963	12
	1.2 The Belaunde presidency 1963-1968	14
	1.3 Military governments 1968-1980	14
	1.4 The 1980s	16
	1.5 Discussion	19
	2. Reforms after 1990	27
III.	THE MINERAL SECTOR	31
	1. Industry structure	31
	1.1 Large-scale mining	32
	1.2 Medium-scale mining	35
	1.3 Small-scale mining	36
	2. Production and consumption	36
	3. Exports	39
	4. Employment	41
	5. The mineral sector crisis in the 1980s	42
	5.1 Financial development of the mineral sector	43
	5.2 International market developments	44
	5.3 Investment	45
	5.4 Operating costs	46
	5.5 Taxation	50
	5.6 Security and labour conflicts	51
	5.7 Summary	52

IV. ROLE OF THE MINERAL SECTOR IN THE NATIONAL ECONOMY

1. Transfers of income from the mineral sector to other sectors 55
1.1 Background 55
1.2 Exchange rate and tariffs 55
1.3 Government income 57

2. Linkages with other sectors 58

V. MINERAL SECTOR POLICIES AND PROBLEMS

1. Government objectives 63

2. Revitalization of the mineral sector 64
2.1 Micro-economic policies 64
2.2 Investment conditions and privatization 66
2.3 Structure of the mineral sector 67
2.4 Government support to the mineral sector 70

3. Promotion of linkages 71

4. Environment 72

5. Labour relations 73

ANNEXES

ANNEX 1 Legislation and institutions 76

ANNEX 2 Statistical tables 83

ANNEX 3 List of persons interviewed in Lima 91

SUMMARY

The present study has been prepared under the project on the role of the mineral sector in the development process of developing countries (MINDEV). This project, which was initiated by the UNCTAD secretariat in 1988, aims broadly to assist developing countries in the planning of mineral sector programmes. More specifically, it is intended to identify those policies or instruments which are most likely to enhance the contribution of the non-fuel mineral sector to economic development and promote a broader-based and eventually self-sustaining process of development. Chapter I presents some of the reasoning behind the project.

A number of case studies on individual countries are carried out with a view to describing in detail the experiences of these countries and identifying the particular problems encountered. Depending on the circumstances of a particular country, the main concern from the point of view of policy formulation may be on maintaining macro-economic equilibrium, or on management of the sector itself and its direct linkages to other sectors.

The present study on Peru focuses on the problems associated with the efficient distribution of earnings from mineral exports in a country highly dependent on such exports. The study also attempts to give a general overview of the development of the mineral sector in Peru, in particular during the 1980s.

Chapter II reviews economic development in Peru.

Mining and metals production has played a crucial role in the development of Peru since before the colonial period. Since independence, minerals and metals production has provided the economic surplus which has made economic development possible. The presence of a large mineral sector has however also given rise to difficulties in maintaining macro-economic equilibrium and has resulted in structural problems.

Until the 1960s, the Peruvian economy remained almost completely oriented towards production and exports of primary commodities, with the production to a large extent controlled by foreign capital. During this period, and in particular after the Second World War, mineral production expanded rapidly. The Mining Code of 1950, which introduced investment incentives and exempted mining from additional taxes for 25 years, was an important factor in attracting foreign investment. Economic policy was strongly orthodox, with public investment financed by government savings and no need for external borrowing. GDP growth was high and inflation was low. In the 1950s and 1960s, however, strains indicative of the limits of the growth model began to develop. There was widespread dissatisfaction with the very uneven income distribution, and export-led growth based on primary commodity production started to face constraints. Peru then turned to the kind of import substituting policies that were already pursued by several other Latin American countries. Import tariffs were

raised, in particular on consumer goods. The exchange rate was kept high, partly as a result of large mineral export revenues.

The objectives pursued through import substituting industrialization were however not achieved. Economic growth decelerated from 6.1 per cent per year in the period 1950-1962 to negative rates in the 1980s. Savings and investment declined and private sector confidence was successively eroded. The variations in the business cycle intensified. In each successive cycle, the crisis became more severe before the downswing was reversed. Adjustment increasingly had to rely on monetary contraction, as fiscal measures became more difficult to use due to the reluctance to raise taxes and the increasing inefficiency of the tax collection system.

Although successive administrations subscribed to the objectives of raising rural incomes and supporting agricultural production, in practice no resources were made available and the situation in the agricultural sector deteriorated steadily. The structure of manufacturing production underwent little change, due to the difficulties of expanding production in non-traditional export sectors and the protected position of the sectors producing for the domestic market. There was little incentive for technical change or productivity increases. A major obstacle to diversification was the persistent tendency to let the real exchange rate appreciate in the cyclical upturns as a result of increased earnings from traditional exports. Unemployment and underemployment increased and the income distribution remained extremely uneven.

The continued flow of income from primary commodity exports, in particular minerals, allowed the policy of import substituting industrialization to continue longer than was the case in countries less well endowed with natural resources. From the 1950s until the end of the 1970s Peru experienced an almost continuous increase in mineral exports and production. The policy of financing import substituting industrialization by mineral export income was however not sustainable in the long term. Mineral exports could not even under the most favourable circumstances continue to grow indefinitely at rates much higher than that of GDP. The rate of expansion decreased in the mid-1970s, and the volume of exports of most mineral commodities declined towards the end of the 1980s.

When the government of President Fujimori came into office in August 1990, it had to deal with a situation characterized by hyperinflation and falling production in all sectors. It rapidly put into effect drastic measures aiming at reducing the budgetary deficit, liberalizing foreign trade, reforming the tax system, restoring investor confidence and reinserting Peru into the international financial community. The emphasis has been on reducing inflation and the government has been pursuing a strict monetarist economic policy. Results so far have been relatively encouraging. Annual inflation has been brought down to two digit numbers, and the budget deficit has been reduced to about 1 per cent of GDP. The trade balance situation is more precarious,

since imports have increased rapidly, while exports have grown only slowly.

It could be argued that a combination of prudent macroeconomic policy, including in particular the sterilization of mineral sector export income through the establishment of some kind of "mineral stabilization fund" to reduce the influence of mineral export income on the exchange rate, and a non-neutral sectoral diversification policy aiming at strengthening the nontraditional export sector could have placed Peru on a path of sustainable growth. This assumes that the temptation to use export revenue windfalls for short term purposes could have been resisted, something that is not evident.

Chapter III reviews the development of the mineral sector in Peru, with a particular emphasis on the crisis experienced by the sector in the 1980s.

The Peruvian mining industry is dominated in terms of production value by large companies owned by the state and by foreign interests, with the state accounting for about 30 and foreign interests for 40 per cent of the total value of production, and the remaining 30 per cent coming from domestic private companies. The domestic private sector thus accounts for a larger share of production than in most developing countries. Peru also has a more even distribution of sizes of operations than most developing countries, including a large number of medium sized companies.

With some minor exceptions, mine production stagnated or declined in the 1980s, and Peru lost international market shares. Following an expansion of refining capacity in the 1970s and the first half of the 1980s, no progress was made in downstream processing of mineral commodities, and a high proportion of mineral production is still exported in relatively unprocessed form. The lack of investment in downstream processing of concentrates during the second half of the 1980s can be attributed to a combination of factors, including low metal prices and an excess of processing capacity at the world level. Employment in the mining industry was on a downward trend through the 1980s. During this period, average real remuneration decreased by more than 50 per cent, as employees in the non-fuel mineral sector lost part of their privileged position with regard to wages and salaries.

During the 1980s, the financial situation of mineral sector companies deteriorated drastically and mineral sector companies saw their profits decline more or less continuously. 1980 was the last year in which all the three segments of the industry (large, medium and small) showed a profit after taxes. There are several explanations for the worsening of the industry's financial situation.

The unfavourable development of international mineral and metal prices was one of the factors behind the stagnation of Peruvian mineral production and exports. It should be noted,

however, that the decline in prices in itself was not sufficient to explain the decrease in export revenue. The inability to expand production was more important, in particular in the late 1980s when international metals prices increased dramatically. Very little investment took place in the Peruvian mining and metallurgical industry in the 1980s. The only significant projects were undertaken by the government in the first half of the decade. After 1985, however, investment in state owned enterprises fell, since the growing fiscal deficit did not allow the government to supply state owned enterprises with funds. Self financing of anything more than necessary replacement of equipment was not a realistic alternative for the vast majority of mineral sector companies.

Productivity increased from 1980 to 1985 but declined thereafter, except for a short-lived increase in 1987. The disappointing development of productivity meant that, in spite of the fall in real remuneration in the mineral sector, labour costs remained a more or less constant proportion of gross earnings in the industry, and even increased slightly. While pressure from labour costs was probably not the major factor underlying the deterioration of the industry, it contributed to the worsening of the situation, in particular given the appreciation of the real exchange rate, which tended to offset the impact of the decline in real remuneration.

Purchases of intermediate products accounted for a high and increasing proportion of gross mineral sector earnings. There are two reasons why this cost element assumed such importance: the appreciation of the real exchange rate and a trade policy which was protective of domestic suppliers of inputs. Had import tariffs been low, or had imports been generally allowed, the mineral sector would have been able to profit somewhat from the appreciation of the real exchange rate by importing its inputs from abroad. However, during most of the 1980s, exchange rates for exports and imports differed, and imports were therefore more expensive than they would otherwise have been. Furthermore, imports of products available domestically were subject to non-tariff measures making imports practically impossible.

Tax payments by the mineral sector as a proportion of sectoral GDP decreased during the 1980s, albeit from very high levels at the beginning of the decade. Compared to the situation in other mineral producing developing countries, Peruvian taxes on the mineral sector were still high towards the end of the period, and it appears reasonable to assume that they constituted a significant financial burden on companies. A high proportion of the taxes paid were indirect taxes, including taxes on imports and exports. The reliance on indirect taxes did not recognize the importance of variations in mineral and metal prices and the fact that the mineral sector is a price taker.

Labour conflicts and terrorist activities have resulted in loss of production, in particular since the Sendero Luminoso guerrillas have often targeted mining installations and infrastructure used by the mineral sector for attacks. Labour

market unrest and terrorism have also had the effect of deterring investors, both foreign and domestic, from investing in the mineral sector.

Chapter IV describes the role of the mineral sector in the Peruvian economy.

Economic development in Peru has relied on the mineral sector to generate foreign exchange earnings which have then been transferred to other sectors of the economy through the mechanisms of the exchange rate, tariffs and taxation. The main beneficiaries of this transfer have been industry producing for the domestic market, the service sector and the central government. The value of the total transfer of income from the mineral sector to other sectors through tariffs and multiple exchange rates in 1988 has been estimated at 216 million US dollars, and the value of the transfer resulting from the appreciation of the real exchange rate at 221 million dollars. During the 1980s, the mineral sector on average contributed 12 per cent of total tax income.

The mineral sector in Peru has relatively strong production-consumption links to other sectors, and these links have been reinforced over time. Some backward linkages have however been established because of necessity rather than preference, as a result of strong protectionist measures in favour of domestic suppliers to the mineral sector. As regards forward linkages, protectionist measures and the use of export taxes have favoured domestic processing. The industries built up as a result are not at present competitive on the international market, and following the implementation of trade policy reforms they are likely to lose a great deal of their competitiveness even on the Peruvian market. Nevertheless, they may provide a basis for future development and the strong linkages could remain after trade liberalization if the industries are sufficiently flexible and adaptive.

The mining and metallurgical industry in Peru has also played a considerable role in the economic and social development of some parts of the country where other employment is scarce. It could however be argued that the transfer of income to import substituting industries results in the major share of the income generated by the mineral sector leaving the region of production and that the benefits are mainly felt in the more developed parts of the country.

Chapter V discusses the problems faced at present by the Peruvian government in the area of mineral sector policy and its actions so far.

The mineral sector, along with the rest of the Peruvian economy, would benefit from macro-economic stability and a higher rate of economic growth, not least since this would increase domestic demand for the products of the mineral sector and create more favourable conditions for an expansion of downstream processing. From the mineral sector's point of view, the

establishment of a rate of exchange that better reflects relative costs has to be seen as a priority, since this sector is for the most part unable to pass on domestic cost increases to its customers. Trade liberalization and reduction of the budget deficit should also yield substantial benefits for the mineral sector.

The overall government objective with respect to the mineral sector is to improve its competitiveness through productivity increases achieved through cost reductions and investment in new equipment. The instruments used include a change to direct instead of indirect taxation, a gradual re-establishment of cost parity through exchange rate adjustment, promotion of foreign investment through improvement of investment conditions, privatization of most or all of the operations managed by state enterprises, improvement of labour relations and support to medium and small scale mining.

In order to revitalize the Peruvian mineral sector, investment is needed. Most of the necessary capital will have to be raised through direct foreign investment. The government appears to have succeeded in restoring the conficence of international investors as seen from the success of the programme of privatization of state owned mineral sector operations.

A policy aiming to maximize the contribution of the mineral sector to economic development should attempt to identify the actual and potential importance of the particular contributions of each segment (large, medium and small scale) of the industry, to develop means to enhance these contributions and to assure that each segment is given opportunities to expand that are consistent with its respective contributions.

The relatively favourable conditions accorded to small scale mining should be seen against the background of this segment's importance to rural development. In the case of small scale mining using conventional methods of production, government support should be directed towards extension services of a technical assistance nature and, in the absence of a well-developed banking system, provision of finance and/or guarantees. It is however difficult to see a justification for giving preferential tax conditions to small mining companies, in particular if the general taxation system is made more adequate to the needs of the mineral sector, and if general economic conditions improve. In the case of artisanal mining, on the other hand, which until recently has been of limited importance in Peru, a simplified and preferential tax treatment may be necessary, partly because of the difficulty in collecting taxes and the limited revenue obtained. In this case as well, technical assistance along with some regulation of the activities is probably called for, mainly to avoid environmental damage, high-grading of deposits, and infringement on mining rights held by formal sector companies, and to improve workers' health and safety.

The medium size mining sector has received relatively little

attention from successive Peruvian governments, in particular relative to its potential importance for the establishment of production/consumption linkages. This segment is dominated by domestic private enterprises that have shown little inclination to expand production or move into further processing. If a government objective is to establish a strong domestic presence in the mineral sector and to use this sector to stimulate growth, then it would seem advisable to attempt to improve the conditions under which it operates.

Another area where the government is clearly in a position to provide useful support is geological mapping, large scale reconnaissance and exploration and mineral resource assessment.

Investment in infrastructure, in particular power generation and transmission, will continue to need the close attention of the government. The possibility of crediting infrastructural investment against the corporate income tax is of some help, but may not always be sufficient.

Some of the linkages between the mineral sector and other sectors of the economy may come under strain as a result of the trade liberalization reforms. Care has to be taken that the networks of suppliers and of downstream processors are not lost in the process. It might be in the interest of the sector concerned and of the government to look at possibilities of strengthening the cooperation between the mineral sector on one hand and its suppliers and customers on the other, for instance in the areas of joint research and development projects and joint export marketing efforts.

The new Peruvian law on the environment provides for very strong enforcement mechanisms and sets extremely ambitious targets. The need to undertake costly investments in order to reduce environmental damage may affect the preparedness of foreign investors to take over state owned installations, in particular if rehabilitation of past environmental damage were to be included in their obligations. It is therefore important that the requirements are made clear and that new investors are not faced with open ended commitments.

Relations between management and labour in Peru have traditionally been tense and labour conflicts have been common. In recent years, the stagnation of the sector and deteriorating general economic conditions have added to the grievances experienced by the workforce. It is clear that there are no easy solutions to these problems which arise partly from the nature of the mineral sector in Peru. Since it provides its workforce not only with their cash income, but also with housing and many other services, there is an abundance of potential areas of conflict, which do not exist in other industries. The transfer of some or all of the services now provided by companies to public authorities might have the effect of reducing friction between companies and their employees.

I. INTRODUCTION

The present study has been prepared under the project on the role of the mineral sector in the development process of developing countries (MINDEV). This project, which was initiated by the UNCTAD secretariat in 1988, aims broadly to assist developing countries in the planning of mineral sector programmes. More specifically, it is intended to identify those policies or instruments which are most likely to enhance the contribution of the non-fuel mineral sector to economic development and promote a broader-based and eventually self-sustaining process of development.

The rationale for the project stems from the fact that for most developing countries the exploitation of their natural resources, together with trade in the primary products derived therefrom, continue to provide the main basis for their economic growth. Even for developing countries that do not at present have any significant mineral sector activity within their territories, as is the case for many of the least developed countries, development of mineral resources provides one of the few feasible ways of raising economic growth. This resource-based process of growth is often perceived as an export-oriented activity whereby primary commodities are exchanged by developing countries for the capital required to expand, diversify and eventually industrialize their economies. The development process is also affected, however, by the nature and extent of the feedback between the exploitation of a country's natural resources and other sectors of the domestic economy. The more extensive this feedback, the greater is likely to be the value of resource-based development for the country concerned.

This issue is especially relevant to the exploitation of non-renewable resources, since feedback will necessarily cease as the resources are exhausted. At that time, the capital represented by the original mineral deposit should have been replaced by other forms of capital capable of yielding the same return. Mineral sector policy in many developing countries is directed towards maximizing foreign exchange income; moreover, a high level of debt service payments, which is typical of many mineral producing developing countries, often dictates that foreign exchange earnings be given a high priority. The high priority given to maximization of foreign exchange earnings may to some extent be in conflict with a government's objective of securing as large a share as possible of the rent generated by mineral exploitation. Traditionally, governments of countries with large mineral sectors have sought to maximize their share of the rent in order to finance investment in sectors considered to be critical to long-term economic growth, such as infrastructure and sectors with strong production and consumption linkages, it being recognized that the mineral sector in itself often provides limited opportunities for the development of such linkages. This strategy raises problems of economic policy

which have been dealt with extensively in economic literature[1]. These problems include:

The taxation problem, that is, how to maximize the government's share of the mineral rent without introducing distortions leading to a less than optimal extraction rate and without dissuading investment;

The macro-economic problem, or how to combine variations in income from mineral exploitation with macro-economic equilibrium;

The absorption problem, which consists of distributing the mineral income to other sectors, and which includes the choice of whether to increase investment or consumption.

The debate concerning "Dutch disease"[2] has focused on the last two problems. However, the Dutch disease theory, at least as originally formulated, deals mainly with the problems that arise when a country experiences a sudden increase in foreign exchange income, usually from oil or mineral exports. From the perspective of developments during the 1980s, the reverse situation, that is, a sudden fall in foreign exchange earnings, is more relevant for many countries. This raises problems of structural adjustment that are just as serious, and often more so, than the problems associated with a boom. The same conceptual framework can however be applied in both cases, and it may be a truism to state that countries that have managed the upturn in export income well are usually better prepared to deal with the consequences of the downturn.

The MINDEV project takes into account the three problems mentioned, as well as the associated problems of structural adjustment following a fall in mineral revenues. An original aim of the project was also to identify ways by which a government can, through micro-economic reform and regulatory measures, ensure that the weak production/consumption linkages between the mineral sector and the rest of the economy can be strengthened, thus avoiding a situation where the mineral sector operates in isolation from the rest of the economy. Subsequently, however, this objective has been given lower priority since for most mineral dependent economies in recent years the problems of macro-economic management have become more acute and since it appears increasingly clear that little in the way of positive results can be expected from micro-economic reform unless macro-economic balance has been achieved[3]. This does not mean that linkages are unimportant, in particular if all linkages are taken into account. The flow of labour income, profits and foreign exchange which can be recycled into the economy may have a large impact in a situation of underemployment or foreign exchange constraints[4]. However, in the absence of macro-economic stability it is unlikely that these positive linkage effects will materialize. Accordingly, while attention is given within the MINDEV project to the desirability of developing and strengthening

linkages, other aspects of economic policy in mineral dependent developing countries, including problems of macro-economic management, have been given more weight.

Work within the project is oriented towards the national level since the problems addressed are directly experienced and policies ultimately implemented at that level. This does not mean, however, that the issue of a supportive international environment can be neglected, and one objective of the project is to produce results which can assist in the creation of such an environment.

A number of case studies on individual countries are carried out with a view to describing in detail the experiences of these countries and identifying the particular problems encountered. The case studies attempt to take into account both the general economic environment and government policies pertaining exclusively to the mineral sector. Depending on the circumstances of a particular country, including the size of the mineral sector relative to the rest of the economy, the main concern from the point of view of policy formulation may be on maintaining macro-economic equilibrium, or on management of the sector itself and its direct linkages to other sectors. Within the group of case study countries, there are countries illustrating both sets of concerns. The countries studied are Chile, the Dominican Republic, Indonesia, Morocco, Peru, Sri Lanka and Zimbabwe. The case studies are intended to throw light on preliminary conclusions generated by the general analytical work carried out within the project, and to provide illustrations of general trends and phenomena observed and data to be used in the preparation of the final conclusions of the project.

The present study on Peru focuses on the problems associated with the efficient distribution of earnings from mineral exports in a country highly dependent on such exports. The study also attempts to give a general overview of the development of the mineral sector in Peru, in particular during the 1980s.

Information for the study was collected during two missions, from 9 to 18 April and from 5 to 10 October 1991. A list of persons interviewed appears in Annex 3 to this report.

Notes

1. See, for instance, A. Gelb et. al.: Oil Windfalls: Blessing or Curse, Oxford, 1988, and S. R. Lewis: Development Problems of the Mineral-Rich Countries, in Syrquin, Taylor, Westphal (eds): Economic Structure and Performance: Essays in Honour of Hollis B. Chenery, San Diego Academic Press, 1984.

2. The term "Dutch disease" refers to the boom-induced rise in the real exchange rate and the associated relative decline of non-mineral traded goods industries. It originally described the effects on the Netherlands economy of the offshore gas discoveries in the 1960s.

3. A study on mineral dependent developing countries recently prepared for the UNCTAD secretariat found that the direct and quantifiable effects of trade and industrial policy on economic growth were dominated by the macro-economic variables, in particular the variability in the real exchange rate (R. Auty, D. Evans: Trade and Industrial Policy for Sustainable Resource-Based Development: Policy Issues, Achievements and Prospects. UNCTAD/COM/..Geneva 1993).

4. For instance, a study by M. Lasaga on Chile showed that an increase in copper production of 10 per cent leads to increased copper sector employment by 2 400 persons, or 0.1 per cent of the total labour force, and has only a small direct impact on output of other industries. However, when indirect macro effects are taken into account, the sustained increase in copper production causes an economy-wide increment of 50 000 employees, or 1.9 percent of the labour force. (M. Lasaga: The Copper Industry in the Chilean Economy: An Econometric Analysis. Lexington 1981, Heath Lexington Books. Quoted in F. Gerard Adams and Jere R. Behrman: The Linkage Effects of Raw Material Processing on Economic Development: a Survey of Modeling and Other Approaches. Journal of Policy Modeling, vol. 3, No. 3, October 1981, North Holland, N.Y.)

II. DEVELOPMENT OF THE PERUVIAN ECONOMY

1. ECONOMIC DEVELOPMENT UNTIL 1990

1.1 The period until 1963

Mining and metals production has played a crucial role in the development of Peru since before the colonial period. Since independence, minerals and metals production has provided the economic surplus which has made economic development possible. The presence of a large mineral sector has however also given rise to difficulties in maintaining macro-economic equilibrium and has resulted in structural problems of the kind often associated with mineral dependent economies, and which have been termed "Dutch disease". According to some observers, Peru can be considered as a "rentier economy", where the economic rent from minerals production has been used to subsidize other sectors and where the availability of rents has held back dynamic development[1].

Until the 1960s, the Peruvian economy remained almost completely oriented towards production and exports of primary commodities, with the production to a large extent controlled by foreign capital[2]. Different commodities succeeded each other as the main source of export income. Table 1 shows the composition of exports from 1890 to 1989. Only the most important commodities are included, which results in some understatement of the importance of mineral exports. Income from commodity production was to a large extent transferred abroad by the owners, with the petroleum industry providing an extreme example (in the 1920s no net foreign exchange was contributed to the economy by the leading company, since it was able to pay its costs in Peru with the income from very limited domestic sales). The strong export orientation of the economy also led to food crops for domestic consumption being crowded out by export crops such as cotton and sugar, which absorbed all new land[3]. Until the late nineteenth century, mining in Peru consisted mainly of relatively small-scale, widely dispersed operations focusing on precious metals. At the turn of the century, copper production expanded dramatically, as companies based in the United States entered the sector and shortly came to dominate it.

The first decade after the Second World War was characterized by continued export-led growth based on primary commodity production. During this period, mineral production, still controlled mainly by companies based in the United States, expanded rapidly. The Mining Code of 1950, which introduced investment incentives and exempted mining from additional taxes for 25 years, was an important factor in attracting foreign investment. Peru during this period has been characterized as "almost a textbook example of commitment to laissez-faire, export-led growth"[4]. The public sector was small, there was a long tradition of little government intervention and a welcoming

attitude to foreign investment. Economic policy was strongly orthodox, with public investment financed by government savings and no need for external borrowing. GDP growth was high and inflation was low. Two adverse external shocks resulting from deteriorations in the terms of trade, in 1952 and 1957, were dealt with through orthodox adjustment programmes including exchange rate devaluations. On both occasions, however, the programmes were aided by favourable events leading to increased commodity export income: improvement in international metals prices in the first case, and the opening of the Toquepala copper mine and the growth of the fishing fleet in the second.

Table 1 Composition of exports by value, 1890-1989 percentage shares main commodities)

Commodity	1890	1910	1930	1950	1960	1970	1980	1989
Sugar	28	20	11	14	7	3	0	0
Cotton	9	14	18	31	19	7	2	2
Wool	15	7	3	7	2	n.a.	n.a.	n.a.
Silver	33	10	4	6	5	7	4	5
Rubber	13	18	0	0	0	0	0	0
Copper	1	18	10	9	21	16	18	15
Petroleum	0	2	30	13	2	3	17	12
Fishmeal	0	0	0	4	13	30	5	12
Coffee	n.a.	n.a.	n.a.	n.a.	n.a.	6	4	9
Iron	n.a.	n.a.	n.a.	n.a.	n.a.	6	2	2
Lead	n.a.	n.a.	n.a.	n.a.	n.a.	14	9	10
Zinc	n.a.	n.a.	n.a.	n.a.	n.a.	6	5	3
Total	99	89	76	93	69	98	66	70

n.a.=not available

Sources: R. Thorp: Economic Management and Economic Development in Peru and Colombia. OECD Development Centre 1991 (figures for 1890-1960).
Instituto Nacional de Estadística: Perú: Compendio Estadístico 1989-1990, Lima, September 1990 (figures for 1970-1989)

In the 1950s and 1960s, however, strains indicative of the limits of the growth model began to develop. There was widespread dissatisfaction with the very uneven income distribution, and export-led growth based on primary commodity production started to face constraints. Earlier, a succession of products had permitted rapid growth of exports. In the 1960s, however, fishing had reached biological limits and increases in agricultural

production required expensive irrigation. While mineral exports continued to grow, the lead time for new mining projects had increased with the growing scale and complexity of production. The economic growth had led to little industrialization, and agricultural production for domestic consumption had been neglected, with growing importance of food imports as a consequence. Peru then turned to the kind of import substituting policies that were already pursued by several other Latin American countries. Import tariffs were raised, in particular on consumer goods. High duties on final goods, combined with exemptions from tariffs on inputs, brought very high protection for import-substituting industries. Generous incentives for investment in manufacturing were introduced, including for foreign investment. The exchange rate was kept high, partly as a result of large export revenues from the mining sector. While this raised production costs in the export industries, the mainly foreign owned mining companies had limited political influence, and the influential groups in the domestic private sector were content with the high exchange rate, since they were increasingly moving into the protected import-substituting industry.

1.2 The Belaúnde presidency 1963-1968

The election of Fernando Belaúnde as president in 1963 could be seen as the political expression of the desire for modernization. To promote expansion of the domestic market, considered a necessary condition for a successful import substitution strategy, and also to redistribute income, government intervention in all spheres of economic activity increased considerably. The government increased expenditures and launched an ambitious public investment programme concentrated on education, housing and road building. Because the higher expenditures were not matched by similar increases in revenues, fiscal equilibrium was lost. The internal and external financing of the deficit resulted in higher inflation and a dramatic increase in public foreign debt. Private investment declined because of high real interest rates and because the initial, "easy" opportunities for import substitution had been exploited. By 1967, balance of payments problems, made worse by a poor cotton harvest and declines in the price of fishmeal, made a devaluation inevitable. The adjustment, which also included a tax reform, was aided by international price increases for the main exports in 1968 and 1969. Dissatisfaction with the government had however reached high levels, and a controversial settlement with the main oil producer, the International Petroleum Company, became the factor that triggered a military coup in October 1968.

1.3 Military governments 1968-1980

The military government presided over by General Juan Velasco initially tried to pursue a policy of resource based industrialization. This was to be based on the establishment of plants which would permit the incorporation of greater value

added in traditional exports and which would lead, via derived demand and income redistribution in agriculture, to solidly based industrialization. The reason why traditional exports had not contributed to industrialization before was seen to be the concentration of resources and decision making. With ownership reforms, including land reform, would come greater access to economic surplus which would be reallocated to uses contributing more directly to the economy. The private sector was expected to respond to nationalistic reforms with a surge of investment and foreign mining companies were to be persuaded to start development of unworked deposits. It proved difficult, however, to convince mining companies that they should invest in new projects. Only one new mine, the Cuajone copper mine, was started after lengthy negotiations with Southern Peru Copper Corporation. Other major mining companies distrusted the government's policies, in particular its labour market reforms, and were unwilling to invest. At this point, the government resorted to nationalization of unworked deposits. The domestic private sector also failed to respond to the government's initiatives, which included strongly protectionist measures intended to support import substitution. The government then attempted to place itself in the role of the principal investor by nationalizing a wide range of industries including the foreign owned mining companies. Between 1968 and 1972 roughly 34 per cent of output and 42 per cent of employment in the modern sector were transferred from the private sector to the government and cooperatives[5]. As it turned out, however, there was little surplus in the companies that were taken over. Meanwhile, the budget deficit was growing as a result of increased government expenditure. The pricing policies pursued by public enterprises in efforts to redistribute income and control inflation aggravated the budgetary situation. Since the government was reluctant to raise taxes, it resorted to foreign borrowing, which expanded fourfold.

In 1975, Morales Bermúdez took over the presidency, and announced adjustment measures, which were however stated not to constitute a deviation from the objectives of the previous government. In practice, a period of failed stabilization attempts without any substantive change in economic policy followed. While public expenditure was cut (except for the military), the deepening recession also reduced tax returns. Exchange rate depreciations had little success in solving the balance of payments problems. The adjustment was postponed until 1978 through continued resort to external borrowing and depletion of international reserves. The public sector absorbed an increasing part of domestic credit and private investment was crowded out. In 1978, an adjustment programme including cuts in current expenditure, increases in public enterprise prices and tax reform, was introduced. The programme was successful since again, international prices for exports increased in 1979. The government was however unable to sterilize the large foreign exchange inflows. Instead, it reduced import restrictions and tariffs, and allowed the real exchange rate to appreciate in order to reduce inflation. The appreciation of the exchange rate

reduced competitiveness for other export sectors, while the prices of non-tradables rose[6].

1.4 The 1980s

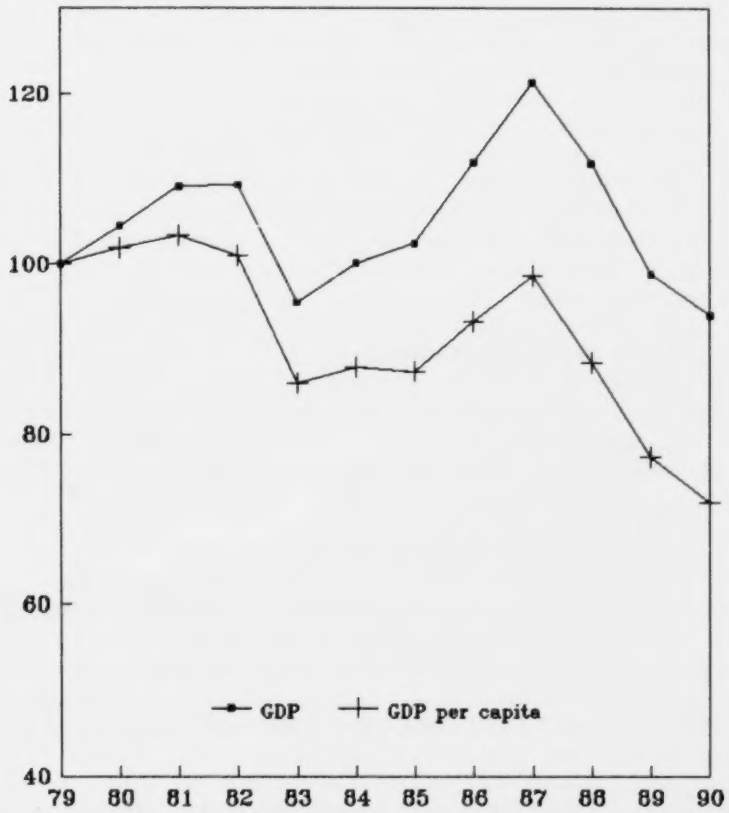
The 1980s can be described as a lost decade for Peruvian economic development. Over the decade, both GDP and GDP per capita declined in real terms, annual inflation reached four digit levels, external terms of trade worsened, both exports and imports declined as a percentage of GDP, government expenditure fell without any significant improvement in the fiscal deficit being achieved, investment declined and the unemployment situation worsened. The tables in Annex 2 provide details of economic development during this period.

With the election of Fernando Belaúnde as president again in 1980, Peru returned to formal democracy. The economic situation was relatively favourable with the values of both traditional and nontraditional exports peaking in 1980. However, foreign debt service was 37 per cent of export earnings. Efforts were made to attract foreign investment but these were not successful. During the first years of the 1980s, fiscal policy was expansive, partly due to an ambitious public investment programme. The budget deficit, which had been brought down by the adjustment programme starting in 1978, increased again. The trade balance turned negative, and inflation surged because price controls had been removed. The situation was made worse by the increase in international interest rates and falling revenue for principal exports. A credit shortage developed, and private investment decreased dramatically. Foreign borrowing, in particular by public enterprises, increased. In 1983, an agreement containing very austere measures was concluded with the IMF. The recessionary impact of the agreement was reinforced by very bad weather conditions leading to large losses in agricultural and fishery production. The adjustment programme continued, although the IMF targets had not been reached and the agreement with IMF had been suspended. The fiscal deficit was reduced and the current account improved as the result of a strong exchange rate depreciation. Adjustment was achieved, however, at the cost of economic growth. Following the large fall in output in 1983, GDP grew only slowly in 1984 and 1985. From 1980 to 1985 per capita GDP fell by an average of 3.9 per cent per year (see Figure 1).

The García administration, which came into power in 1985, initially took radical steps to deal with the economic problems inherited from its predecessor[7]. The policies pursued were based on a heterodox view of the causes underlying the high rate of inflation and the foreign exchange constraint. Inflation was seen to result from rising unit costs due to exchange rate depreciation, rising interest rates and inertial inflation. The nature of price formation in the modern sector was also seen as important, where prices were either government controlled or determined by suppliers. Given the large unused capacity, companies were assumed to be unable to fully exploit economies

of scale and consequently, inflation could not be reduced by austerity measures. A central argument was that the budget deficit was not only not inflationary, but actually recessionary, since the deficit adjusted for external debt service payments showed a surplus. The foreign exchange constraint was seen as having two main sources: foreign debt service and the inflexibility of export and import structures, caused by low price elasticity of supply for the principal exports and low price elasticity of demand for principal imports.

Figure 1 GDP and GDP per capita at constant prices (1979=100)

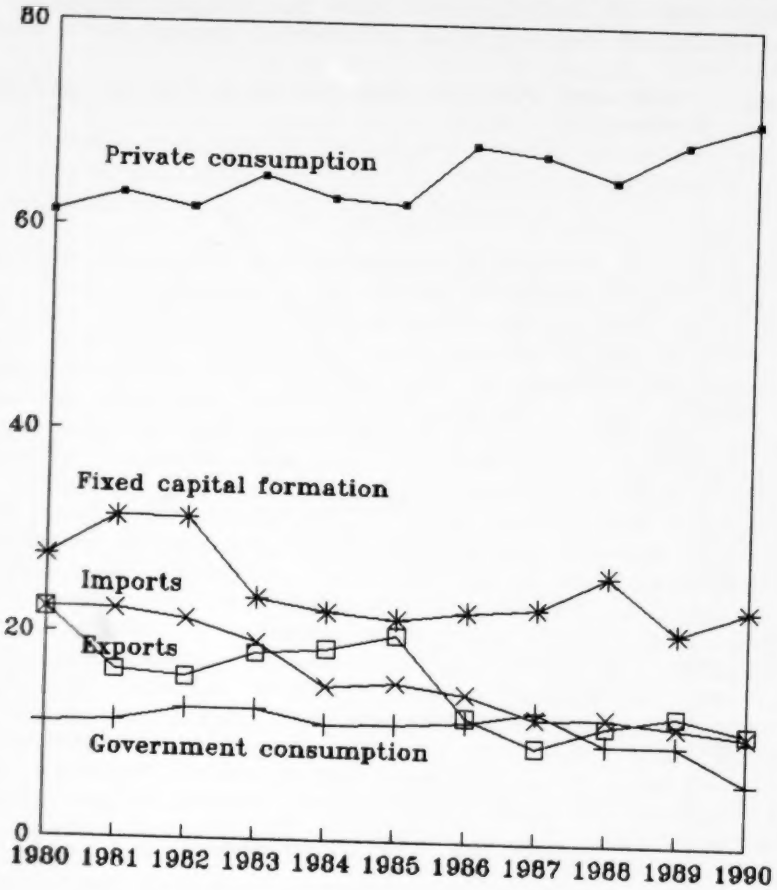


Source: Instituto Nacional de Estadística: Perú: Compendio Estadístico 1989-1990, Lima, September 1990

The government attempted to make the key prices - the exchange rate, the interest rate and the wage rate - work in the right direction by first freezing them to control expectations and second to use them to manipulate profitability and so reactivate the economy. The change in expectations was expected to produce a transfer of resources from financial and speculative activities into productive investment. Reactivation would produce falling unit costs to assist in reducing inflation. Meanwhile the public sector would gain increased revenues. The currency was devalued and the exchange rate fixed. Prices and wages were raised and then frozen, and it was announced that they would

remain frozen for six months. Interest rates were reduced and foreign currency deposits frozen. Service of medium and long-term public sector foreign debt was limited to 10 per cent of earnings from exports of goods and non-financial services.

Figure 2 Expenditure on GDP, per cent, current prices



Source: Instituto Nacional de Estadística: Oferta y Demanda Global 1990. Lima, May 1991.

Initially, the policy was a success. GDP grew rapidly, inflation fell, private investment increased dramatically, consumption increased at rates corresponding roughly to the rate of growth in GDP. However, the growth was concentrated to manufacturing for the domestic market, construction and commerce. The amount of restructuring that took place was very limited, with the total share of manufacturing actually decreasing if measured at constant prices. Exports fell, since the reduction of inflation was allowed to lead to appreciation of the real exchange rate. The current account balance deteriorated. The increase in public consumption, although slower than in GDP, generated an increase in the budget deficit, since the reductions

in indirect taxes (most importantly the tax on petrol) undertaken for reasons of redistribution of income and control of inflation were not matched by increases in direct taxes. The share of tax income in GDP fell from 14.3 percent in 1985 to 5.9 per cent in 1989[8]. The budget deficit eventually became inflationary despite the underutilization of capacity, since unexpected bottlenecks, chiefly caused by relative price distortions caused by selective price controls, appeared. Inflation accelerated again in 1987 for these reasons, but also due to the exchange rate subsidy granted by the Central Bank (different exchange rates were used for exports and imports and multiple exchange rates were used to promote priority sectors). The foreign exchange constraint became binding more rapidly than anticipated, mainly because of the overvaluation of the exchange rate, but also because the capability of the nontraditional export sector to expand production was overestimated. The government tried to defend international reserves by restrictions on imports and temporary bans on repatriation of profits. The domestic financing of the growing budget deficit crowded out private investment, which was in any case already declining. At the end of 1987, the Peruvian economy was in stagflation. The subsequent recession in 1988-89, partially brought on by falling government expenditure, led to improvements in the external accounts, but continued lack of fiscal discipline, combined with increasing dollarization and the inflow of "narcodollars" led to hyperinflation. An expansionary programme at the end of 1989 resulted in a slowing down of the rate of decline in GDP, but the situation was unstable and inflation accelerated again in 1990. Figure 2 shows the development of expenditure on GDP during the 1980s.

1.5 Discussion

Some general trends in Peruvian economic development during the period following the Second World War can be identified. Table 2 gives a summary view of economic development in Peru during this period.

Economic growth decelerated from 6.1 per cent per year in the period 1950-1962 to negative rates in the 1980s. Savings and investment declined, with savings falling from 22.3 per cent of GDP in 1960-62 to less than 12 per cent in the early 1980s. Enterprise savings were more or less constant, probably because enterprises preferred to rely more on internal financing in periods of high inflation, especially if access to bank credit was difficult, but household and public saving decreased[9]. Private sector confidence was successively eroded and private investment declined from levels of more than 15 per cent of GDP in the 1950s to below 10 per cent in the 1970s and 1980s (except for a short-lived resurgence in the second half of the 1980s). Table 3 shows the development of investment in Peru from the mid-1950s.

Table 2 Growth rates, budget deficits and inflation, 1950-1989

Period	GDP(a)	Exports(a)	Budget deficit(b)	Annual inflation(c)
1950-62	6.1	8.8	-0.2	7.9
1963-68	4.6	3.0	2.9	11.6
1969-75	5.5	0.1	3.9	10.6
1976-79	0.7	10.0	6.8	48.6
1980-85	0.5	-1.1	6.0	94.2
1986-89	-1.5	-1.7	5.9	445.8

(a) Rate of growth per year
(b) Per cent of GDP. Figures for years before 1968 refer to the central government; later years correspond to the nonfinancial public sector. A negative sign indicates a surplus.
(c) Geometric averages

Source: A.J. Hamann, C.E. Paredes: The Peruvian Economy: Characteristics and Trends (in C.E. Paredes, J.D. Sachs(editors): Peru's Path to Recovery: A Plan for Economic Stabilization and Growth, Washington D.C. 1991)

The variations in the business cycle intensified. In the period up to 1962, variations in the business cycle were mainly brought on by changes in the terms of trade. As import substituting industrialization became the dominant model - although relatively late compared to several other Latin American countries - changes in the business cycle increasingly came to reflect "populist cycles"[10]. These were characterized by an expansionary phase with increase in domestic demand and rapid growth of output, particularly in manufacturing, which ended when financing the expansion of manufacturing led to the depletion of international reserves. During the recessionary phase, real wages fell and domestic absorption was rapidly reduced. In each successive cycle, the crisis became more severe before the downswing was reversed. With each crisis, adjustment increasingly had to rely on monetary contraction, as fiscal measures became more difficult to use due to the reluctance to raise taxes and the increasing inefficiency of the tax collection system as the informal sector grew in importance. Monetary policy also had to be increasingly severe, partly due to the dollarization of the economy which strengthened the inflationary feedback mechanism[11]. Table 4 illustrates these points for three stabilization programmes.

Table 3 Investment as a percentage of GDP 1955-1989

Period	Private investment	Public investment	Total
1955-58	17.5	4.8	22.3
1959-63	15.3	3.3	18.6
1964-68	10.8	4.6	15.4
1969-73	7.9	4.8	12.7
1974-76	6.5	8.8	15.3
1977-79	8.4	5.8	14.2
1980-82	8.5	4.5	13.0
1983-84	7.4	9.6	17.0
1985-89	13.4	4.5	17.9

Sources: R. Thorp: Economic Management and Economic Development in Peru and Colombia. OECD Development Centre 1991 (figures for 1955-1984).
Instituto Nacional de Estadística: Perú: Compendio Estadístico 1989-1990, Lima, September 1990 (figures for 1985-1989)

Table 4 Comparative data on three stabilisation programmes, 1957-76

	1957-60	1966-68	1973-76
Credit contraction	-8 %	-17 %	-22 %
Money supply of internal origin	-7 %	+3 %	-22 %
Public spending % of GDP	-2.7 points	-1.7 points	+1.8 points
Tax revenue % of GDP	+1.1 points	+0.2 points	-2.2 points
Public sector deficit % of GDP	-2 (1958)	-3 (1968)	-10 (1975)

Source: R. Thorp: The Stabilisation Crisis in Peru 1975-8 (in R.Thorp, L. Whitehead (editors): Inflation and Stabilisation in Latin America. London, 1979.

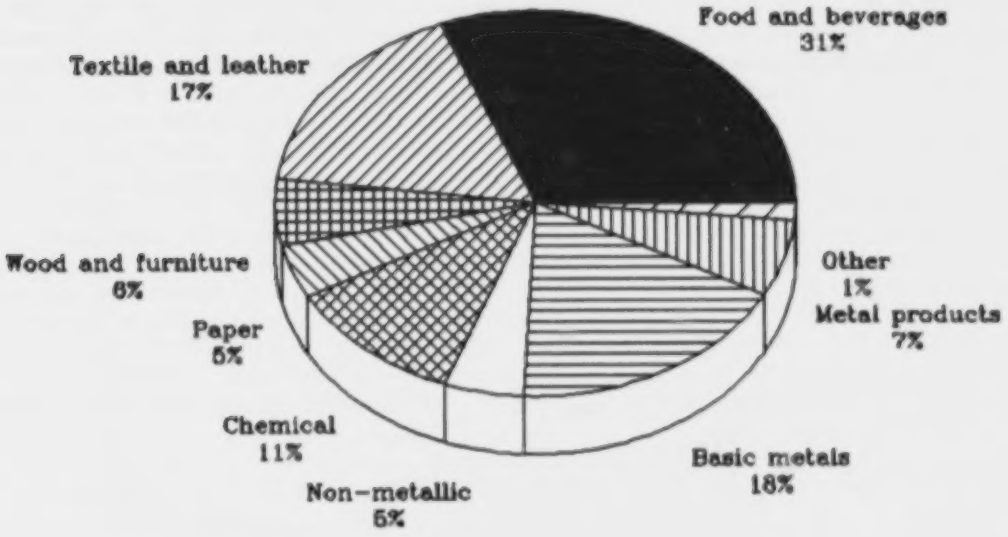
The import substitution policies led to similar problems as elsewhere in Latin America: discrimination against agriculture, exaggerated capital intensity and little employment generation.

Although all the governments in office since Belaúnde's first presidency in 1963 subscribed to the objectives of raising rural incomes and supporting agricultural production, in practice

no resources were made available and the situation deteriorated steadily. The land reform undertaken by the military government in the second half of the 1970s was limited to transferring modern-sector agricultural enterprises to their workers organized in cooperatives, while the remainder of the rural population were to have access only to the poorer lands of the Sierra estates. Even in the latter case, hacienda lands were generally transferred to the permanent employees, leaving independent peasants and temporary labourers altogether outside the scope of the reform. About one third of the country's total agricultural and pastoral land was redistributed, benefitting between one quarter and one third of the rural labour force[12]. Food imports have remained high, as agricultural production has grown only very slowly, at an average annual rate of 1.3 per cent from 1970 to 1989 at constant prices. Production per capita of all major agricultural commodities has remained constant or declined. Meanwhile, the economically active population in agriculture has increased by 30 per cent over the same period. Of these, about 60 per cent were considered as underemployed in 1985 and 1986, the only years for which data are available. Average remuneration in agriculture fell from 21 per cent of the national average in 1979 to 14 per cent in 1988[13].

The structure of manufacturing production remained relatively unchanged during the 1980s (see Figure 3 for the structure in 1990), due to the difficulties of expanding production in non-traditional export sectors and the protected position of the sectors producing for the domestic market. There has been little incentive for technical change or productivity increases. Labour productivity actually decreased slightly over the period 1971-1987. A major obstacle to diversification has been the persistent tendency to let the real exchange rate appreciate in the cyclical upturns as a result of increased earnings from traditional exports. This has made it more difficult for nontraditional exporters to enter foreign markets. Conversely, in the downturns the same industries have found it difficult to expand exports due to tight monetary policies and to maintain revenue from domestic sales in a situation of reduced domestic demand. The limited size of the domestic market has of course also been an important reason behind the relatively poor performance of these industries. While the industries producing for the domestic market are mainly oriented towards the production of consumer goods, where the market is large enough to exploit some economies of scale, other industries, where the domestic market is smaller, such as capital equipment production and production of intermediate inputs for industry, have had limited growth prospects on the domestic market. A few such industries have managed to survive through close and protected links with exporting industries, as for example in the case of suppliers of some inputs to the mining and metallurgical industries.

Figure 3 Distribution of manufacturing production 1990



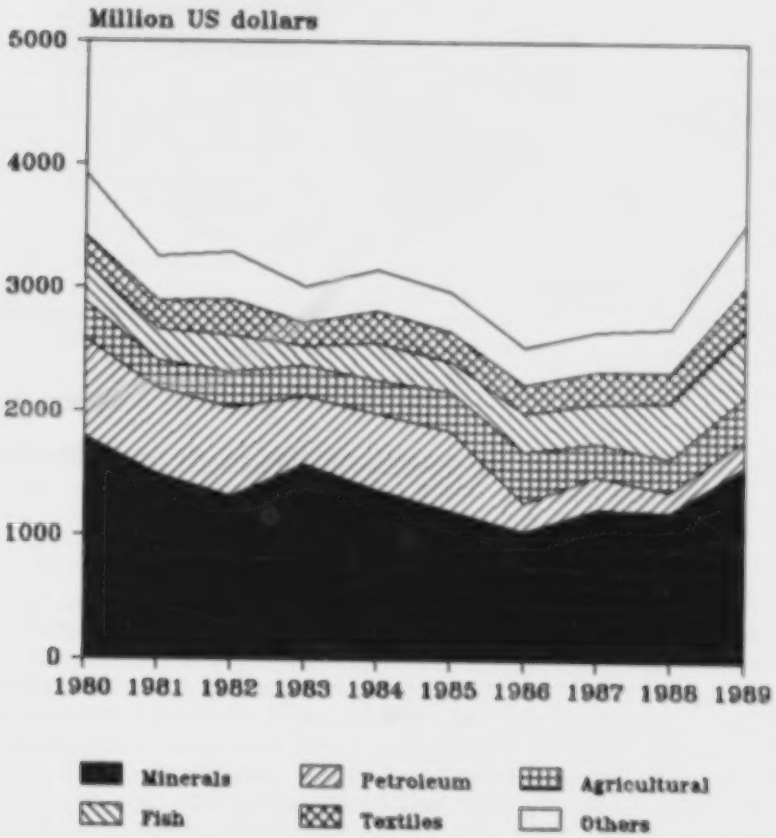
Source: Instituto Nacional de Estadística: Oferta y Demanda Global 1990. Lima, May 1991

Non-fuel mineral exports have continued to account for nearly half of total exports, while exports of petroleum and derived products declined dramatically from the mid-1980s. Non-traditional exports, mainly textiles, metals, fish products and agricultural products, remained stagnant through the 1980s (see Figure 4). Intermediate products and capital goods account for the vast majority of imports, reflecting the consumer goods orientation of the industry that produces for the domestic market. In addition to the general contraction of imports during the 1980s, the decline in capital goods imports deserves to be particularly noted (see table 7 in annex 2). Clearly, this reduction has had serious implications for the preservation of productive capacity. Since 1987, light crude oil is imported since the quality of crude oil produced domestically is too low to be used directly in the refineries.

Unemployment and underemployment has increased. A very large proportion of the economically active population is not adequately employed. According to a survey carried out in 1985/86, 68.5 per cent were underemployed and 5.1 per cent unemployed. The situation is judged to have deteriorated since then. In Lima, the share of the economically active population that was adequately employed declined from 65.4 per cent in 1982 to 18.6 per cent in 1989[14]. The informal sector has grown to account for half the labour force as a result of an excess supply of labour arising from the use of capital intensive methods of production in spite of capital being the scarce resource, and unbalanced regional growth, which causes large migration to urban

areas[15]. The income distribution remains uneven, with the upper two deciles accounting for 55 to 60 per cent of income[16].

Figure 4 Distribution of exports among major commodity groups

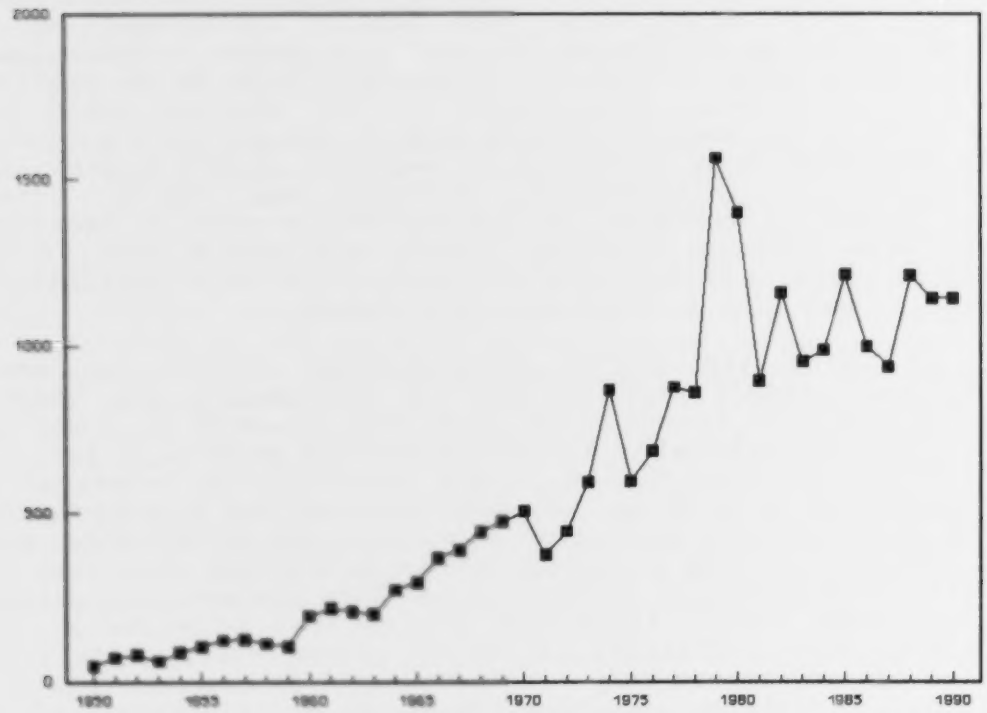


Source: Banco Central de Reserva del Perú: Memoria 1989

The continued flow of income from primary commodity exports, in particular minerals, allowed the policy of import substituting industrialization to continue longer than was the case in countries less well endowed with natural resources. Indeed, most of the adjustment programmes that were successful were so in large measure because they were saved by favourable developments in international commodity markets, allowing a redressment of the current account imbalances and a relatively painless reduction of the fiscal deficit. This then freed resources to allow the government to revert to expansive policies. The "populist cycles" referred to earlier could thus be said to have been fuelled by commodity export booms. From the 1950s until the end of the 1970s Peru experienced an almost continuous increase in mineral exports and production (see Figure 5). Mining production increased at an

average annual rate of almost 13 per cent from 1950 to 1980, while the rate of growth in GDP was just under 5 per cent. Almost the entire mineral production was exported. Mineral commodities accounted for about half the total export value throughout this period, and exports as a share of GDP increased dramatically. The policy of financing industrialization based on import substitution by mineral export income was however not sustainable in the long term. Mineral exports could not even under the most favourable circumstances continue to grow indefinitely at rates much higher than that of GDP, since this would have necessitated new, increasingly expensive investment in ever larger and more complex projects, and also because the anti-export bias of the policies pursued impoverished the traditional export industries, including mining, and made it increasingly difficult to maintain even historical growth rates. The rate of expansion decreased in the mid-1970s, and the volume of exports of most mineral commodities declined towards the end of the 1980s.

Figure 5 Non-fuel mineral exports 1950-1990 (million US dollars)



Source: UNCTAD secretariat (includes SITC 27, 28, 68)

During most of the 1980s, international prices of metals of export importance to Peru were on a downward trend. The increased income resulting from the short price boom in 1979 had not been utilized to strengthen the financial situation of the mining industry and low prices during most of the 1980s, combined with

increases in operating costs due to increasing prices for inputs and stagnating productivity, resulted in decapitalization. Since investment and maintenance were neglected, the industry was not in a position to take opportunity of the dramatic improvement in the international market situation from 1988. At the end of the 1980s, the possibilities of continuing a policy of import substituting industrialization financed by mineral sector income were effectively exhausted.

What alternatives were there then to the policy of import substituting industrialization? The military government under Velasco tried for a short period to move towards a policy of resource based industrialization, but was thwarted by the reluctance of the private sector to play the role of willing, risk taking investor that the government had assigned to it. It can be argued that a stronger emphasis on resource based industrialization, including the establishment of capital intensive, technologically complex mineral and metals processing facilities would have created little additional employment and might have worsened the problems of income and technological dualism in an economy already characterized by sharp differences between regions and population groups. The output of these facilities would have been mainly directed towards export markets. There might have been little improvement in the prospects for establishment of strong backward linkages since establishing such linkages is generally likely to be difficult in a small economy. Consequently, the economy would have continued to be characterized by export-led growth and it might have been even more sensitive to external shocks arising from variations in international minerals and metals demand. Nevertheless, investment in downstream processing facilities might have produced a better growth performance and, in that sense at least, a better solution to the problem of absorbing the export income from a large minerals sector.

If using the income from mineral exports to expand traditional export capacity was not considered, the question remains how this income could have been invested in a way that would have contributed to sustained economic growth. In Peru, the choice was to support the import substituting industry, the rationale for this being that this industry had to be protected since it would otherwise never be able to get established, given the tendency for the exchange rate to appreciate as a result of growing mineral sector export income. This argument would appear to have some merit, since the fluctuations in exchange rates resulting from variations in export income would quickly have killed off any import competing sectors if an orthodox policy of letting the exchange rate bear the burden of adjustment had been followed. However, it proved impossible to avoid inefficiency and rent seeking behaviour in the protected import substituting industries, which gradually came to constitute a burden on the economy. The reliance on non-tariff measures facilitated rent seeking by encouraging the creation of monopolies based on privileged access to imports. In spite of this, successive attempts at trade liberalization were quickly abandoned as the consequences became politically intolerable. It should also be

noted that Peru shared a difficulty with other mineral rich countries: the existence of a large mineral sector generally means that import substituting industrialization has to start with a higher wage rate than is otherwise the case in spite of underemployment.

The problems of pursuing a policy of orthodox adjustment in a country such as Peru stem not only from the fact that import competing industries are subjected to strain when the exchange rate fluctuates, but also from the very large exchange rate adjustments that are needed for the policy to be successful. The large and growing size of the devaluations included in successive adjustment programmes illustrates this point. The reason is that the price elasticity of export supply is very low, given the difficulty of expanding production rapidly (mines and metallurgical plants have long investment lead times and usually have to operate at a very high degree of capacity utilization because of the high fixed costs). The price elasticity of demand for imports is also likely to be quite low, since a large share of imports is accounted for by capital goods, industrial inputs and food. In the 1980s, raw materials, intermediate products and capital goods consistently accounted for more than 85 per cent of imports, with inputs and capital goods for industry alone representing 60 to 70 per cent (see table 7 in Annex 2). Consequently, exchange rate adjustments have to be very large to yield any significant results[17].

Using the benefit of hindsight, and drawing on the experiences of several mineral dependent economies, it could be argued that a combination of prudent macroeconomic policy, including in particular the sterilization of mineral sector export income through the establishment of some kind of "mineral stabilization fund" to reduce the influence of mineral export income on the exchange rate, and a non-neutral sectoral diversification policy aiming at strengthening the nontraditional export sector could have placed Peru on a path of sustainable growth[18]. This assumes that the temptation to use export revenue windfalls for short term purposes could have been resisted, something that is not evident. It is clear, however, that the anti-export bias that has been an element of the policies followed by most recent governments in Peru has to be reversed, something that is apparently understood by the new government (see section 2 below), and that reforms aiming to improve the performance of the mineral sector are necessary.

2. REFORMS AFTER 1990

When the government of President Fujimori came into office in August 1990, it had to deal with a situation characterized by hyperinflation and falling production in all sectors. It rapidly put into effect drastic measures aiming at reducing the budgetary deficit, liberalizing foreign trade, reforming the tax system, restoring investor confidence and reinserting Peru into the international financial community. The scope of the restructuring

programme is without precedent in Peruvian economic history. The emphasis is on reducing inflation and the government has been pursuing a strict monetarist economic policy. Drastic austerity policies have had to be pursued since the only other way to hold back monetary expansion would be to limit central bank intervention to buy dollars. This in turn would exacerbate the problem of the overvalued exchange rate, which results to a great extent from the inflow of "narcodollars". It is estimated, on the basis of the area used for cultivation of coca, that this inflow amounts to 1 500 to 2 000 million US dollars per year[19]. A devaluation could, however, only be effected either through increased central bank buying of dollars - which would result in further monetary expansion - or by a return to a fixed exchange rate combined with strict wage and price controls - a policy that has not worked in the past and that is partly responsible for the present situation. The government tries to deal with the problem partly by measures leading to increased demand for dollars, such as deregulation of imports and reduction of tariffs. While there is no official target for the exchange rate, the money supply being the critical variable, the present policy can be described as a managed float. A uniform exchange rate was introduced in September 1990. An informal long-term objective is to achieve cost parity with competitors on export markets.

Fiscal discipline is central to the government's strategy. It was reported in 1991[20] that the IMF served notice that neither commercial nor multilateral financial assistance would be forthcoming if the budget deficit exceeded 2 per cent of GDP. Measures taken by the government to achieve this objective have included a reform of the tax system aiming at broadening the tax base and increasing the efficiency of tax collection, increases in the price of petrol, fuel oil, water and electricity, reductions in the civil service and privatization of state owned enterprises.

Results so far have been relatively encouraging. Annual inflation has been brought down to two digit numbers (57 per cent in 1992), and the budget deficit has been reduced to about 1 per cent of GDP, mainly through expenditure reductions since the hoped for increase in tax revenue has not yet materialized. The trade balance situation is more precarious, since imports have increased rapidly, by 21 per cent in 1991 and 16 per cent in 1992, while exports have grown only slowly, by 3 per cent in 1991 and 5 per cent in 1992[21]. The poor performance of exports is to a large extent due to unfavourable developments of metal prices. The declines in the prices of copper, zinc, lead and silver during 1991 and 1992 correspond to a loss of about 10 per cent of total export income. This development has of course increased the urgency of the mineral sector revitalization programme, which is described in chapter V.

Notes

1. See O. Bomsel: Dynamiques Economiques des Pays Miniers et Instabilité des Marchés de Matières Premières Minerales. Doctor's thesis presented at l'Ecole Nationale Superieure des Mines de Paris, 27 January 1986.

2. For detailed descriptions and analyses of economic development in Peru, see for instance R. Thorp: Economic Management and Economic Development in Peru and Colombia, OECD Development Centre, 1991; R. Thorp, G. Bertram: Peru 1890-1977: Growth and Policy in an Open Economy, New York, 1978; and A.J. Hamann, C.E. Paredes: Economic Characteristics and Trends (in C.E. Paredes, J.D. Sachs (editors): Peru's Path to Recovery: A Plan for Economic Stabilization and Growth, Washington D.C., 1991).

3. R. Thorp, op. cit. 1991.

4. R. Thorp: The Stabilisation Crisis in Peru 1975-8 (in R. Thorp and L. Whitehead(editors): Inflation and Stabilisation in Latin America. London, 1979)

5. R. Thorp: op. cit. 1991

6. For an analysis of the importance and consequences of export income variations in the case of Peru, in particular as regards the 1979 boom, see Grupo de Análisis para el Desarrollo: Domestic Management of Export Revenue Instability. Informe Preliminar. Lima, November 1990.

7. See E.A. Paus: Adjustment and Development in latin America: The Failure of Peruvian Heterodoxy, 1985-90, World Development, Vol. 19, No. 5, May 1991, for a critical discussion of the economic policies of the García administration.

8. Banco Central de Reserva del Perú: Memoria 1989.

9. Figures from B. Fischer: Domestic Capital Formation, Financial Intermediation and Economic Development in Peru. Savings and Development, No. 4, 1988.

10. See A.J. Hamann, C.E. Paredes: op. cit.

11. Since 1978, Peru has permitted dollar denominated deposits in its banking system. It was hoped at the time that this would stem capital flight and possibly to attract resources. The prospect of devaluation, combined with negative real interest rates on domestic currency deposits resulting from interest rate ceilings, induced asset holders to hold a portion of their wealth in dollar certificates. At the same time, actual devaluation directly increased the domestic currency equivalent of the dollar denominated part of the money supply. The increased money supply measured in domestic currency, combined with diminished demand for assets denominated in domestic currency, helped sustain Peruvian inflation. An additional contributing factor was the fact that Peruvian firms in the early 1980s took on increasing quantities of dollar denominated credit. Since firms' financing costs were thus related to the devaluation rate, devaluation led to increased cost pressure. Finally, the dollarization reduced the effectiveness of exchange rate policy, since the effectiveness of a devaluation is related to how long an increased real foreign exchange price can be sustained after a devaluation. Where a parallell purchasing power unit exists, the inflation feedback mechanism is activated more rapidly. For detailed discussions of the importance of dollarization to the inflation process in Peru, see B. Fischer: op. cit. and P. Beckerman: Inflation and Dollar Accounts in Peru's Banking System, 1978-84. World Development, Vol. 15, No. 8. 1987.

12. R. Thorp: op. cit. 1991.

13. Instituto Nacional de Estadística: Perú: Compendio Estadístico 1989-1990. Lima, September 1990.

14. Instituto Nacional de Estadística: op. cit.

15. A.J. Hamann, C.E. Paredes: op. cit.

16. R. Thorp: op. cit. 1991

17. The problems associated with pursuing a policy of orthodox adjustment in countries dependent on mineral exports are highlighted by a recent study prepared for the UNCTAD secretariat (R. Auty, D. Evans: Trade and Industrial Policy for Sustainable Resource-Based Development: Policy Issues, Achievements and Prospects, UNCTAD/COM/.., 1993). This study shows that mineral dependent economies tend to experience higher than average variations in exchange rate variability, and that high exchange rate variability tends to be associated with lower economic growth.

18. See, for instance, R. Auty, A. Warhurst: Sustainable development in mineral exporting economies. Resources Policy, March 1993.

19. Information from Ministry of Economics and Finance.

20. The Economist Intelligence Unit: Peru, Bolivia. Country Report No. 1 1991.

21. Figures from International Monetary Fund: International Financial Statistics

III. THE MINERAL SECTOR

This chapter gives an overview of the situation and development of the Peruvian mineral sector with a special focus on the 1980s. There has been no systematic attempt to take later developments into account, although where relevant, recent events such as ownership changes are mentioned.

1. INDUSTRY STRUCTURE

The Peruvian mining industry is dominated in terms of production value by large companies owned by the state and by foreign interests, with the state accounting for about 30 and foreign interests for 40 per cent of the total value of production. The remaining 30 per cent is accounted for by domestic private companies, which means that the domestic private sector is significantly more important in Peruvian mining than in most other developing countries. State owned enterprises account for about 35 per cent of the production of copper, lead and zinc and about 20 per cent of silver production. Of the two most important foreign owned companies, one has a share of 60 per cent in copper production and 3 per cent in silver production, while the other operates the only iron ore mine in the country. The shares of other foreign interests are not yet very significant.

Table 5 Mine production of major minerals by categories, per cent of total

Product	Large 1985	Large 1990(a)	Medium 1985	Medium 1990(a)	Small 1985	Small 1990(a)
Copper	91.5	92.3	6.9	5.2	1.6	2.6
Lead	34.4	35.5	56.1	53.7	9.4	10.8
Zinc	40.2	34.3	51.8	57.9	8.0	7.9
Silver	30.1	23.7	55.7	62.9	14.2	13.4
Iron ore	100.0	100.0	0.0	0.0	0.0	0.0

(a) January to August

Sources: Instituto Nacional de Estadística: Perú: Compendio Estadístico 1989-1990, Lima, September 1990.
Ministerio de Energía y Minas: Boletín No 06-90.

The industry is usually divided into large (production of over 5 000 tons of ore/day), medium (350 to 5 000 tons/day) and small (less than 350 tons/day) mining companies. Table 5 shows the distribution of production of major minerals between the three categories in 1985 and in 1990. The shares remained more or less constant, although the medium-sized mining industry

increased its share of zinc and silver production somewhat. In total value terms, the large mining companies account for about 70 percent of production (mainly copper), the medium-sized companies for 27 per cent (mainly silver) and small scale mining for 3 per cent (polymetallic ores). Large scale mining accounted for 57 per cent of the 57 000 employees in mining and metallurgy in 1988, with medium scale mining accounting for 30 per cent and small scale for 13 per cent.

1.1 Large scale mining

The large scale mining sector consists of three state owned enterprises, Minero Perú, Centromin Perú and Tintaya, and two foreign owned companies, Hierro Perú and Southern Peru Copper Corporation[1].

Minero Perú was created in 1970 to be responsible for the mining interests of the State and to develop deposits that had reverted to the government as a result of their owners not fulfilling their legal obligations. It operates the Ilo copper refinery, the Cerro Verde copper mine and refinery, the Cajamarquilla zinc refinery, the Bayóvar pilot phosphates plant (which was owned 60% by Minero Perú, but the Grau regional government took over this share under the regionalization laws[2], the other share holders being the Corporación Financiera de Desarrollo (COFIDE, 30%) and Empresa Nacional de Comercialización de Insumos (ENCI), 10%), the San Antonio de Poto gold pilot plant, the Iscaycruz zinc mine, which is still under development and which is owned by Minero Perú (25%), Buenaventura (15%), and the Brazilian private sector companies Paraibuna de Metais (45%) and Norberto Oderbrecht (15%), and the Callacuyán anthracite mine. Minero Perú also owned part of Tintaya (see below). The company has also been responsible for the development of a number of new projects, where participation from the private sector, particularly from abroad, has been sought.

Minero Perú showed losses in the period 1985 to 1987, mainly due to the exhaustion of oxide ore reserves at Cerro Verde (a project is now under-way to exploit the sulphide ore part of the deposit), and electricity cuts to the Cajamarquilla refinery resulting from terrorist activity. In both cases, capacity utilization was reduced. In 1988 and 1989, the company had a positive net result, but in 1990 rising costs led to a large loss (171.7 million US dollars out of total sales of 1 039.7 million dollars). In the first half of 1991, Minero Perú again showed profits as capacity utilization approached 95 per cent. In 1992, however, zinc production fell by 31 per cent due to shortage of electricity for the Cajamarquilla refinery. The government has decided to sell off Minero Perú's assets one by one. The sales started with the Condestable copper mine, which was sold in May 1992 for 1.29 million dollars to a Peruvian company called Prodebolsa[3]. Next, the Quellaveco copper deposit was acquired by Empresa Minera de Mantos Blancos, a Chilean subsidiary of Anglo American, in January 1993 for 12 million dollars. Mantos Blancos plans to invest 562 million dollars in the development of a

bioleaching process to produce copper cathodes[4], and has subsequently obtained assistance from the International Finance Corporation to finance development costs[5]. The Cerro Verde copper mine and the Ilo copper refinery will be sold during the autumn of 1993, followed by a couple of undeveloped copper deposits and, finally, the Cajamarquilla refinery and the San Antonio de Poto gold operation.

Centromin Perú was formed as a result of the nationalization of Cerro de Pasco Corporation in 1973. It operates mines at seven sites producing mainly copper, lead, zinc, silver and tungsten. The company's metallurgical complex at La Oroya treats concentrates from the company's own mines as well as from other mines in the region. It produces refined copper, lead, zinc, silver, gold, bismuth, cadmium, indium, copper sulphate, crude antimony, zinc sulphate, selenium, sulphuric acid, zinc powder and tellurium. The most important products are refined copper, accounting for 26 per cent of sales value in 1990, refined silver (20 per cent), zinc concentrate (20 per cent), refined zinc (19 per cent) and refined lead (9 per cent). Total sales in 1990 were 479 million dollars.

Large investments were made in Centromin in the late 1970s and early 1980s, when mine capacity was almost doubled and refining capacity for copper increased by almost 50 per cent. Investments peaked in 1981 at 200 million US dollars. They then fell rapidly, and from 1984 until the end of the 1980s, annual investment was only 20 to 30 million dollars, or about 5 per cent of turnover. The low level of investment has led to difficulties in maintaining production, which is reflected in low capacity utilization. In 1990, capacity utilization in mining operations was 78 per cent, while in concentrates production it varied from 73 to 80 per cent depending on the mineral, and in refining from 80 to 89 per cent. Capacity utilization remained at about the same levels in 1991 and 1992. During the 1980s, the company on average lost money. Large losses occurred in particular in 1982, 1986 and 1990. In 1990, losses were 106 million dollars, or more than 20 per cent of sales. Centromin is in the process of implementing a rehabilitation programme to increase productivity and to reduce bottlenecks and replace obsolete equipment so that capacity utilization can be increased. The workforce was cut by 40 per cent to about 12 500 employees in 1992 and 54 million US dollars were invested in new equipment[6]. As a result of cuts in costs, Centromin achieved a profit of 19.3 million dollars in 1992 on sales of 404 million dollars. The government has decided to privatize Centromin and has stated that preference will be given to companies bidding for the entire assets[7].

Tintaya is a Special Mining Company formed in 1981. It was owned by Minero Perú (68.45%), Centromin Perú (26.5%) and COFIDE (5.05%). Centromin's and Minero Perú's holdings were however taken over by the government of the Inca region without compensation, as a result of the laws on regionalization[8]. The company operates the Tintaya copper mine, which was opened in 1985.

Hierro Perú was formed in 1975 after the nationalization of the Marcona Mining Company. It operates the Marcona open-cast iron ore mine and a concentration and pellets plant at San Nicolás. It also produces small amounts of copper concentrates. The company has 3 200 employees. Production of saleable iron ore products fell from 5.6 million tons in 1980 to 3.3 million tons in 1990. Nominal capacity is 7.3 million tons per year. Profits have been very low or negative and the company has had very limited funds for investment. Investment was very low in the period 1983 to 1988, and actually fell below 1 million US dollars in 1987. In 1988 and 1989 investment was higher, at 15.3 and 17.8 million dollars respectively, but insufficient to eliminate the bottlenecks or to replace obsolete equipment. Hierro Perú has had to face rapidly increasing costs, mainly for fuel, and as a consequence of this and of the overvalued exchange rate, domestic purchases have accounted for over 80 per cent of total purchases since 1985 (91 per cent in 1990). In addition to problems originating in the domestic Peruvian situation, the company has had a difficult marketing situation, due to the high sulphur content of its products, which have become increasingly difficult to sell on its main markets in Japan and the Republic of Korea.

In October 1992, Hierro Perú was sold to Shougang Corp. of China for 120 million dollars. Shougang has also pledged to assume 42 million dollars in accumulated debt, and has committed itself to invest 150 million dollars in modernization over the next three years. Capacity will be raised to 10 million tons per year, with the entire output going to China[9].

The Southern Peru Copper Corporation (SPCC), at present owned by Asarco (52.31%), Marmon Group (20.7%), Phelps Dodge (16.25%) and Newmont Mining (10.74%), was formed in 1952. It operates the Toquepala copper mine since 1960. After many years of negotiations, the Cuajone copper mine also began operations in 1976. Both mines have relatively low ore grades at 0.8 per cent copper. The concentrate from both mines is smelted at the company's smelter at Ilo to produce blister copper, three quarters of which is refined at Minero Perú's Ilo refinery. SPCC is required by law to use the Ilo refinery. During the 1980s, SPCC showed a positive result before taxes only in 1983, 1985, 1988 and 1989. In 1990, the company had a small profit. Overall, return on equity has been very low. While SPCC, unlike the state owned enterprises, has been able to maintain its capital equipment, high local costs and taxes have undermined profitability.

In January 1992, SPCC launched a five-year investment programme including projects costing 300 million US dollars. Of this, 100 million dollars will be used for renovation of production equipment and new technology. Of the 200 million dollars remaining, half is to be allocated to three environmental projects at the Ilo smelter: a sulfuric acid plant, a mine tailings control project and a sewage treatment facility. The other half is allocated to solvent extraction-electrowinning plants at Toquepala and Cuajone that will increase copper production by about 36 000 tons per year. SPCC has also

repurchased 60 million dollars worth of its own shares (13.8 per cent of the shares) as well as a joint venture interest that Billiton held in the Cuajone mine. Under an agreement with the government SPCC has transferred 55 million dollars to an account with the Central Reserve Bank of Peru. The government has undertaken not to discriminate against SPCC in comparison with other mining companies[10]. The reason for this undertaking is the repeated complaints by SPCC over discriminatory treatment in matters such as taxation, prices for fuel etc.

1.2 Medium-scale mining

There are about 35 medium-size mining companies, operating some 70 mines. Most of the companies are privately owned, but the state has an interest in the Buenaventura mining company. This company is one of the country's largest silver producers and also produces copper and lead.

Table 6 Principal private sector groups of companies, share of total mining sector sales and assets in per cent, 1988

Company groups	Share of sales	Share of assets
Benavides de la Quintana	7.2	4.2
Arias Davila	6.7	2.3
Hochschild-Huaron	5.0	3.6
Baertl-Montori	4.6	2.9
Brescia	3.5	1.9
Laumer-Acomsa	1.9	0.5
Gubbins	1.8	1.0
Vera Ballon	1.5	0.6
Montero	1.0	0.7
Chungar	1.0	0.3
Total	34.1	18.0

Source: C. López Cisneros: Perú: Diagnóstico de la Minería 1950-1988. Lineamientos Generales para su Desarrollo. Instituto Nacional de Planificación. Lima, February 1990.

Most of the companies are controlled by Peruvian interests, while foreign shareholders hold the majority in only a few companies. Ten groups of companies, most of them controlled by major private sector companies, account for almost all of the medium-size mining production (see table 6).

The medium scale mining sector went through a period of dynamic growth in the 1970s, to some extent fuelled by foreign investment. In the 1980s, growth within this segment stagnated, and capacity utilization in 1991 was 60-70 per cent, as compared to 80-90 per cent in large scale mining.

1.3 Small-scale mining

There are about 400 small mining companies in Peru. These are generally owned and operated by small entrepreneurs, often as family enterprises. They generally mine polymetallic deposits, often with silver providing the major part of the income. The small mines are considerably less mechanized than the large and medium scale operations, and they generally use labour intensive methods of mining. Cooperatives have been established, but have in general not proved to be successful. Most of the companies are not operating at present, since they were highly dependent on the silver price, which has fallen dramatically. As a consequence, Banco Minero, which was financing investment in small scale mining, had to cease its activities. Successive governments have launched various initiatives in order to support small scale mining, and the Fujimori administration is continuing this tradition. Some artisanal mining, in particular of gold, takes place in the country, but is of relatively small economic importance.

2. PRODUCTION AND CONSUMPTION

Tables 7 and 8 show the development of mineral and metals production in Peru in the 1980s. With some minor exceptions, such as tin and tungsten, and, more importantly, gold, mine production stagnated or declined. While the 1980s were a period of stagnation in demand for most metals and minerals, the decline in Peruvian production was more serious than in other countries, and Peru lost market shares.

As regards the development of refined metals production, following an expansion of refining capacity in the 1970s and the first half of the 1980s, no progress was made in downstream processing of mineral commodities, and a high proportion of mineral production, particularly of lead, zinc and silver, is still exported in relatively unprocessed form (see table 9). Considering the expansions of mine capacity that also took place during the late 1970s and early 1980s with the opening of Cuajone and Tintaya, it is probably not too surprising that, statistically speaking, metallurgical capacity was unable to keep up. In this context, it should be noted that downstream processing of concentrates on an industrial scale was practiced from a very early date in Peru. Already in the 1890s, most of the domestic production of lead and silver ores was processed in the country, using domestically developed technology[11]. Centromin's metallurgical complex at La Oroya was constructed in the first years of the twentieth century, and a large portion of the

present capacity was in place in the 1940s.

Table 7 Mine production, tons recoverable metal content unless otherwise indicated

Metal	1980	1985	1988
Copper	335 253	389 206	301 723
Lead	174 139	224 086	148 291
Zinc	419 398	520 967	423 801
Silver	1315	1995	1568
Gold (kgs)	4719	6621	9164
Iron ore (thousand tons)	3783	3421	2839
Antimony	394	377	246
Bismuth	512	785	363
Cadmium	507	398	259
Tin	1172	3703	4098
Molybdenum	2458	3003	2222
Tungsten	209	484	619

Source: Ministerio de Energía y Minas: Anuario de la Minería del Perú 1986-1988. Lima, December 1989.

Table 8 Refined metals production, tons unless otherwise indicated

Metal	1980	1985	1989
Copper	224 839	230 465	219 958
Lead	77 795	81 809	74 365
Zinc	59 424	162 725	137 844
Silver	733	748	654
Gold (kgs)	1 771	2 633	992

Source: Instituto Nacional de Estadística: Perú: Compendio Estadístico 1989-1990, Lima, September 1990.

The lack of investment in downstream processing of concentrates during the second half of the 1980s can be attributed to a combination of factors, including low metal prices and an excess of processing capacity at the world level. These factors have contributed to make additions to processing capacity in Peru a proposition that would have had major difficulties in attracting international investment capital, even

if foreign investment in Peru had not already been excluded for other reasons. In view of the country's economic situation, it would have been impossible to raise domestic funds to finance investments of this magnitude.

There are several reasons for the stagnation that took place in the Peruvian mineral sector during the 1980s, the most important ones being the appreciation of the real exchange rate, protectionist trade policies and a tax structure that has taken insufficient account of the cost structure and income variability of the mining industry. These reasons will be discussed in greater detail in the following sections of this chapter.

Table 9 Distribution of metals production over processing stages, percentage shares of recoverable metal content

Product	1980	1985	1988
Copper			
Refined	67.1	59.2	59.5
In blister	30.3	31.0	29.3
In sulphate	1.6	1.6	1.1
In concentrates	1.1	8.2	10.1
Lead			
Refined	44.7	36.5	36.2
In concentrates	55.3	63.5	63.8
Zinc			
Refined	14.2	31.2	29.7
Powder	0.3	0.5	1.3
Sulphate	0.7	0.2	0.4
In concentrates	84.8	68.1	68.6
Silver			
Refined	55.7	39.5	32.5
Sterling	0.4	0.0	0.0
In blister	3.1	2.4	1.9
In concentrates	40.8	58.1	65.6

Source: Ministerio de Energía y Minas: Anuario de la Minería del Perú 1986-1988. Lima, December 1989.

Table 10 shows domestic consumption of metals in Peru in 1980, 1985 and 1988. For the purposes of this table, consumption is defined as the metal consumed in the production of semifabricates. While domestic consumption of metals increased rapidly during the first half of the 1980s, except for lead and iron ore, it stagnated in the second half, except for lead and silver. The stagnation in consumption of the most important industrial metals must be seen against the background of the general economic decline during this period. In an international perspective, consumption is relatively high, with per capita consumption of copper, lead and zinc being exceeded (except for developed countries) only in newly industrialized countries or

countries on the verge of joining this group, such as Malaysia. Other developing countries exporting the same or some of the same minerals and metals, such as Mexico, the Philippines, Zambia and Zimbabwe, generally have lower per capita consumption. It deserves to be noted, however, that per capita consumption of copper in Chile is about twice that of Peru, although it did not grow significantly during the 1980s[12]. Accordingly, while downstream processing of minerals and metals in Peru remains modest compared to the situation in developed countries, it appears that mining and basic metals production has provided a stimulus to the production of semifabricates, probably partly helped by high tariffs on imports of these products.

Table 10 Domestic consumption of metals (tons unless otherwise indicated, and per cent of mine production)

Metal	1980 volume	1980 %	1985 volume	1985 %	1988 volume	1988 %
Copper	13 279	4.0	33 516	8.6	31 458	10.4
Lead	20 298	11.7	11 671	5.2	19 699	13.3
Zinc	24 379	5.8	78 665	15.1	78 722	18.6
Silver (kgs)	4 370	0.3	58 200	2.9	248 045	15.8
Gold (kgs)	1 810	38.4	1 959	29.6	2 282	24.9
Iron ore (a)	285 628	7.6	232 040	6.8	201 263	7.1

(a) Iron content in iron ore

Source: Ministerio de Energía y Minas: Anuario de la Minería del Perú 1986-1988. Lima, December 1989.

3. EXPORTS

About 90 per cent of the Peruvian mineral and metals production is exported. Table 11 shows the development of non-fuel mineral sector exports during the 1980s, while Figure 6 shows the distribution of exports among major markets in 1989 and 1990. It should be noted that Figure 6 is based on figures covering less than the total mineral sector exports. In table 11, mineral sector exports, while excluding exports of petroleum, have been broadly defined to include steel and non-metallic mineral product exports. Defined this way, mineral sector exports account for well over half of Peru's total merchandise exports. The traditional export commodities, copper, lead, silver and zinc, nevertheless dominate exports.

The sector's stagnation is of course reflected in the export figures. As is seen from table 11, the 1980 export figure was not reached again in the decade.

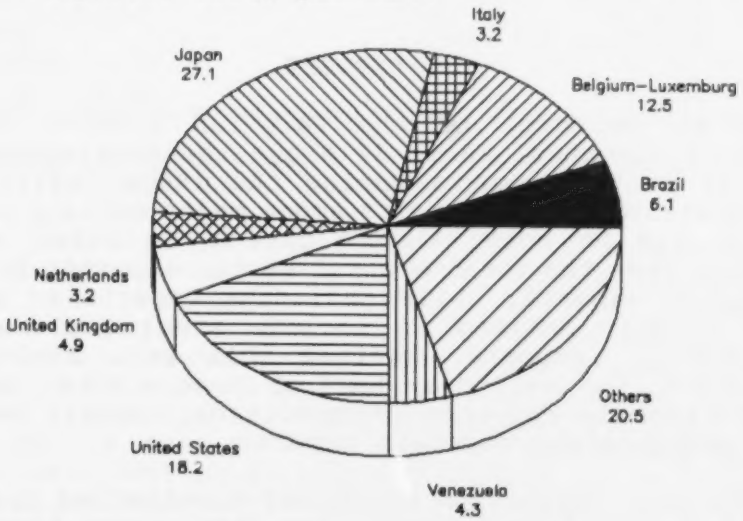
Table 11 Mineral sector exports, million US dollars

Product	1980	1985	1987	1989
Copper	750	476	515	793
Iron ore	95	76	58	56
Gold (a)	40	43	1	-
Silver	315	140	93	98
Lead	384	202	251	205
Zinc	211	268	234	425
Minor metals (b)	64	72	57	69
Steel	86	89	119	182
Non-metallic minerals	32	15	14	22
Total	1 977	1 336	1 342	1 849
Per cent of total exports	50.5	44.9	51.1	52.4

(a) Private gold exports were prohibited in 1986, when the Central Bank and the Banco de Minero became the only legal purchasers of gold. Since then, exports of gold were included in transactions of the Central Bank and were no longer reflected in trade statistics. Private gold exports became legal again in March 1991.
(b) Assumed to be equal to "other traditional products".

Source: Instituto Nacional de Estadística: Perú: Compendio Estadístico 1989-1990. Lima, September 1990.

Figure 6 Destinations of Peruvian minerals and metals exports, 1990, per cent



Source: Instituto de Comercio Exterior

Exports are strongly oriented towards industrialized countries. This reflects the slow growth of regional markets, as well as the fact that the Latin American countries, given their natural resource endowments and comparative advantages, are competing with rather than complementing each other. The largest economy in the region, Brazil, is largely self-sufficient in minerals and metals, although, as figure 6 shows, Brazil is Peru's fourth largest market for mineral and metal exports. Few attempts appear to have been made in the past to develop markets outside industrialized countries or the Latin American region. This contrasts with the situation in Brazil and Chile, for instance, where, as a result of intensive marketing efforts, a significant share of exports goes to countries in Southeast Asia.

4. EMPLOYMENT

Employment in the mining industry (not including fuels and non-metallic minerals) was on a downward trend through the 1980s, and the number of employed as a share of the economically active population decreased from 1.15 per cent in 1980 to 0.79 per cent in 1988. While the large companies increased their employment, mainly as a result of expansive hiring practices in the state owned enterprises, employment in medium and small companies decreased. Since 1988, the last year for which comprehensive statistics are available, employment has declined further because of the general decline of the industry. Work force reductions have extended also to the state owned companies, as these companies have started to implement the restructuring programmes initiated by the present administration. It is estimated that through production and consumption linkages, the mining industry generates about 250 000 employment opportunities in other industries (see chapter IV, section 2 below).

Table 12 shows average remuneration in the mining and metallurgical industry compared to other sectors. During the 1980s, real remuneration decreased in all sectors except in petroleum extraction and the private service sector, but it declined dramatically in the non-fuel mining, as employees there lost part of their privileged position with regard to wages and salaries. While mining industry employees received more than three times the average remuneration in 1980, they received less than double in 1988. The development in the steel and non-ferrous metals industries was similar, although the decline was less severe in the latter industry. In the state owned enterprises, remuneration fell more than it did on average. In Centromin, for example, real salaries and wages in 1990 were on average only one fifth of what they were in 1974, with salaries for professionals declining proportionately more than workers' wages[13]. To some extent, however, the figures for remuneration exaggerate the decline in conditions, serious as it is, since they do not take into account services provided by the employer, such as housing. The cost of providing these services may account for 40-45 per cent of total labour costs[14]. The industry suffers from a shortage of technicians, while there is an oversupply of academically qualified geologists and engineers.

Table 12 Average remuneration in selected industries in per cent of average overall remuneration

Industry	1980	1985	1988
Mining	319	305	196
Petroleum extraction	898	1729	2395
Steel industry	499	452	285
Non-ferrous metals	432	435	350
Agriculture	18	15	14
Manufacturing	159	144	139
Construction	130	120	126
Financial services	517	557	732
Services to enterprises	133	127	181
Government services	259	261	214

Source: Based on Instituto Nacional de Estadística: Perú: Compendio Estadístico 1989-1990. Lima, September 1990.

One important characteristic of the Peruvian mining industry is the large number of labour conflicts. In each of the years from 1980 to 1989 the number of strikes in the mining industry was at least 15 per cent of the total number of strikes in the country, and the mining industry accounted for at least the same proportion of working days lost due to strikes[15]. This reflects the ease of labour organization in the mining industry with often large numbers of employees at each installation, as well as the strong position of the employees in an industry which traditionally has made high profits. Furthermore, it is not surprising that strikes occur in such an industry when the employees see their privileged position compared to other groups disappearing.

5. THE MINERAL SECTOR CRISIS IN THE 1980S

During the 1980s, the total value of Peruvian mineral sector production first increased by about 26 per cent from 1980 to 1985 and then decreased by the same amount to 1988. During the same period, the financial situation of mineral sector companies deteriorated drastically. Clearly, the two phenomena are interlinked. There are several explanations for the stagnation of production and the simultaneous worsening of the industry's financial situation. In the following, the financial development of the mineral sector is briefly described and a number of explanations are discussed. In this context, it should be noted that intertemporal comparisons are complicated by the very high rate of inflation. Consequently, it is often not possible to examine for instance the development of individual cost elements

over a period of time. Instead, the comparison has to be carried out using relative measures calculated separately for each year.

5.1 Financial development of the mineral sector

Mineral sector companies in Peru have seen their profits decline more or less continuously for the past decade. 1980 was the last year in which all the three segments of the industry (large, medium and small) showed a profit after taxes. Since then, at least one segment, but usually all three, have had losses after taxes have been paid. Table 13 shows the distribution of earnings of the industry. The main points to be noted from the table, except for the mounting losses, are the large relative increase in purchases of intermediate products and the smaller increases in labour costs and interests. These components "crowded out" other elements such as taxes, depreciation and, of course, profits.

Table 13 Distribution of revenue in the mining and metallurgical industry, per cent of total revenue

	1980	1983	1985	1986	1987	1988
Purchases of intermediate products	32.3	33.5	31.2	54.9	47.8	66.9
Indirect taxes	9.9	5.4	6.0	5.8	3.1	3.9
Depreciation	6.9	7.8	9.3	12.0	13.8	4.7
Labour	15.3	18.7	18.4	27.7	22.0	20.4
Interest	8.2	28.7	20.5	9.3	18.5	9.8
Reserves	5.8	4.2	4.4	2.4	4.5	2.9
Corporate income tax	10.4	5.0	4.6	0.8	2.5	5.9
Profit after taxes	11.2	-3.2	5.6	-13.1	-12.2	-14.5
Total earnings	100.0	100.1	100.0	99.8	100.0	100.0

Source: Calculated from figures in Ministerio de Energía y Minas: Anuario de la Minería del Perú 1986-1988. Lima, December 1989.

Table 14 shows the development of the debt/equity ratio for the mining industry as a whole and total assets in the 1980s. It is clear from the table that the financial situation of the industry deteriorated badly during the period. The increase in total assets in 1988 is the result of adjustments to take into account changes in the exchange rate rather than of significant new capital being brought into the industry.

Table 14 Debt/equity (D/E) ratio of the mining industry and total assets

	1980	1983	1985	1986	1987	1988
D/E ratio large companies	0.98	1.96	1.25	1.79	2.57	1.44
of which: state owned enterprises	1.62	2.50	2.81	5.43	6.18	3.14
Southern Peru Copper Corporation	0.54	0.95	0.22	0.23	0.43	0.28
D/E ratio medium companies	0.63	0.92	0.90	1.17	1.26	1.48
D/E ratio small companies	1.08	287	2.44	3.18	4.68	23.10
D/E ratio whole industry	0.90	1.68	1.19	1.69	2.47	1.66
Total assets, million US dollars	3 010	2 247	2 345	2 436	3 393	7 017

Source: Calculated from figures in Ministerio de Energía y Minas: Anuario de la Minería del Perú 1986-1988. Lima, December 1989.

It is generally considered that mining companies need to keep a low debt/equity ratio in order to withstand movements in minerals and metals prices and demand. This is even more so in a country such as Peru, where other risks, in addition to those arising from movements in the international business cycles, have to be taken into account. While the state owned enterprises can normally rely on funds directly provided by the government as a last resort, the increasing role of debt financing reduces the freedom of movement of these enterprises and make investment projects contingent on political approval. This constrains the independence of company management and makes it averse to risk taking. The development in the medium size companies is possibly even more worrying. This segment would normally be expected to contain some dynamic enterprises and to provide future large companies from within its ranks. However, the deterioration of the financial situation of the companies concerned has drained them of the resources needed to expand capacity and undertake new projects. Finally, as regards the small companies, their worsened situation illustrates the inherent weakness of these companies in terms of financial resources.

5.2 International market developments

The unfavourable development of international mineral and metal prices is one of the factors behind the stagnation of Peruvian mineral production and exports in the 1980s as well as the deterioration of the financial situation of mineral sector companies. It should be noted, however, that the decline in prices in itself was not sufficient to explain the decrease in export revenue. The inability to expand production was more important, in particular in the late 1980s when international metals prices increased dramatically. This is clear if the development of export income from the five major export

commodities (copper, iron ore, lead, silver and zinc) in the 1980s is compared with the preceding decade. From 1970 to 1980, exports of these commodities increased from 592 to 1753 million US dollars. Of the increase, 78% was due to positive price developments, while 22% reflected increased export volumes. In 1989, exports had decreased to 1535 million dollars. Most of the decrease, or 58%, was due to falling volume[16].

Peru lost international market shares for all its major mineral exports during the second half of the 1980s. For copper, the decline started even earlier. Domestic consumption of metals increased during the period (see table 10 above), and this increase corresponded roughly, in value terms, to the volume component of the decline in exports. However, this only means that if the increased domestic consumption had not occurred, mineral sector exports would have remained constant in volume terms, and market shares would still have been lost. Since base metals are homogeneous commodities, competitiveness and the ability to expand production and market shares is completely determined by production costs. As was demonstrated by Chile during the 1980s, production can be expanded even when demand grows slowly, provided that production costs are kept low[17]. In the case of Peru, however, production was held back by the increase in production costs relative to competitors and the lack of investment in new capacity, itself to a large extent a consequence of the rise in production costs.

5.3 Investment

Very little investment took place in the Peruvian mining and metallurgical industry in the 1980s. There was no new foreign investment, as foreign investors lost all interest in Peru, particularly during the García administration. The only significant projects were undertaken by the government in the first half of the decade, most importantly the starting up of the Tintaya copper mine and the Cajamarquilla zinc refinery. After 1985, however, investment in state owned enterprises fell. From 1985 to 1988, a total of 138 million US dollars, or on average slightly less than 7 per cent of total fixed assets per year, were invested in Centromin, Hierro Perú and Minero Perú. Less than 6 million dollars of this was new investment, the rest consisting of necessary replacement of equipment[18]. The companies received no infusions of capital from the government.

There are no figures available on investment in the private sector during the period, but industry sources indicate that even investment necessary to retain production capacity was curtailed. Indirect evidence, such as year to year comparisons of the book value of fixed assets, supports this view. A large number of mines were closed down, in particular in the small mining sector.

There is, however, no lack of investment prospects. A large number of potential projects have been brought to the feasibility study stage and are being brought to the attention of potential investors. An inventory of projects was put together in 1990

jointly by the mining industry and the Consultative Commission of the Ministry of Energy and Mines[19]. While it has not been possible to analyse the projects in detail, it appears that from a strictly technical and economic viewpoint many of them would deserve serious consideration.

Why then, did not investment take place? While the lack of interest on the part of foreign investors is easy to explain, in particular against the background of Peru's self-elected isolation from the international financial community, terrorist activity and limits on repatriation of profits, the necessary funds could, in theory, have been supplied from profits, by the government or by domestic investors. As is seen from tables 13 and 14 above, financing more than necessary replacement of equipment from profits was not a realistic alternative for the vast majority of mineral sector companies. As regards the government, the growing fiscal deficit did not allow the government to supply state owned enterprises with funds. On the contrary, these enterprises continued to make a net contribution to the central government, even after their financial situation had become precarious (see chapter IV, section 1.3 below). Finally, the absence of perceived profit opportunities in the mineral sector is likely to have deterred even the most daring of domestic capitalists from investing in the mining industry. In the following, the reasons behind the negative development of costs and profits will be discussed, and the effect of macro-economic and trade policies pursued by the government will be placed in context.

5.4 Operating costs

It is difficult to analyze the development of operating costs in terms of costs per ton of metal produced, not only because the data are mostly not directly available, but also because the enterprises concerned produce several different metals, which makes it difficult to estimate production costs for each metal separately by indirect methods. The variations in by- and co-product credits complicates the measurement of costs over time. Accordingly, the discussion in this section relies on general company cost data, with no attempt being made to allocate the costs to different products.

One of the few studies on production costs that takes by- and co-product credits into account is a study by the World Bank[20]. According to this source, production costs for copper in Peru declined from 104.5% of the world average in 1975 to 82.4% in 1980 and 81.4% in 1985. The improvement from 1975 to 1980 was mainly due to an increase in by-product credits, while between 1980 and 1985, operating costs decreased significantly but by-product credits fell as well. Copper production in Peru was thus well positioned in terms of relative costs in 1985. It was after this year, however, that the main deterioration in the cost situation occurred, as seen from table 13 above. In the following, the development of the two main components of operating costs, labour and inputs, is discussed.

5.4.1 Productivity and labour costs

The insufficiency of investment is reflected in the development of productivity, which, if measured as tons of ore mined per employee per year, increased from 1980 to 1985 but declined thereafter except for a short-lived increase in 1987. In 1988, productivity measured this way was 80 per cent of the 1980 figure (see table 15). If account is taken of the value of the different types of ore produced, productivity showed a somewhat smoother development, remaining slightly above the 1980 figure in most years until 1987, but it dropped to 75 per cent of the 1980 figure in 1988. One reason for the disappointing development of productivity is that labour market legislation made it extremely difficult to reduce the workforce when necessary. Nevertheless, employment did fall, in particular in medium scale (a reduction by 31.5% from 1980 to 1988) and small scale mining (a reduction by 20%). These reductions reflect closures of capacity, since the development of productivity in these segments of the industry was not significantly different from that of productivity in the industry as a whole. Large scale mining increased its employment by 8%.

Table 15 Productivity in Peruvian mining 1980-88 (1980=100)

Year	Ore mined per employee per year	Value of output per employee*
1980	100.0	100.0
1981	99.3	104.6
1982	113.9	115.2
1983	88.3	104.1
1984	113.8	98.7
1985	114.6	113.9
1986	99.8	104.5
1987	136.7	103.7
1988	79.6	75.0

* Output of each mineral weighted by its average share of total value of mine production 1980-88.

Sources: Ministerio de Energía y Minas: Anuario de la Minería del Perú 1986-1988. Lima, December 1989 (employment, ore mined, prices)
Instituto Nacional de Estadística: Perú: Compendio Estadístico 1989-1990, Lima, September 1990 (output of products).

The disappointing development of productivity meant that, in spite of the fall in real remuneration in the mineral sector

during the 1980s (see section 4 above), labour costs remained a more or less constant proportion of gross earnings in the industry, and even increased slightly (see table 13 above). As a share of value added in the industry, they increased from 22.6 per cent in 1980 to 61.6 per cent in 1988[21]. It should also be noted that remuneration had increased dramatically in the late 1970s when metals prices were high. While cost pressure from labour costs was probably not the major factor underlying the deterioration of the industry, it contributed to the worsening of the situation, in particular given the appreciation of the real exchange rate (see below), which tended to offset the impact of the decline in real remuneration.

5.4.2 Inputs

As is seen from table 13 above, purchases of intermediate products accounted for a high and increasing proportion of gross earnings. There are two reasons why this cost element assumed such importance: the appreciation of the real exchange rate and a trade policy which was protective of domestic suppliers of inputs.

Domestic suppliers accounted for between 76 and 81 per cent of all goods purchases by the non-fuel mineral sector from 1980 to 1985, the latest year for which figures is available. If it is assumed that services such as transportation, power etc. were only purchased from domestic suppliers - an assumption that is probably an approximation of reality - the proportion of domestic supplies in total outside purchases increases to between 85 and 89 per cent[22]. There is no reason to assume that the proportion declined during the rest of the 1980s.

The development of the real exchange rate is shown in table 16. The table shows how the real exchange rate first appreciated in the early 1980s when prices of mineral exports were relatively favourable, and then depreciated as a result of the depreciation that formed part of the 1983 austerity programme. The large depreciation in 1985 was the result of the devaluation undertaken at the beginning of the García administration. After 1985, however, the failure of exchange rate adjustments to keep pace with accelerating inflation resulted in a continuing real appreciation. It is easily understood that this strong appreciation had a major effect on the relative prices of domestic inputs. Unlike non-traditional export sectors, the mineral sector did not benefit from preferential exchange rates during the periods when multiple exchange rates were in effect.

Table 16 Real exchange rate 1980-1989*

Year	A Nominal exchange rate for exports (1978=100)	B External price index (1978=100)	C Domestic price index (1978=100)	D Real exchange rate A*B/C
1980	181	123	267	83
1981	263	126	468	71
1982	438	125	770	71
1983	1019	124	1626	78
1984	2169	127	3418	81
1985	6900	136	9002	104
1986	9119	152	16017	87
1987	13606	172	29767	79
1988	100356	175	228304	77
1989	2177157	178	6334911	61

* A fall in the rate reflects an appreciation

Source: Instituto de Estudios Económicos Mineros: La importancia económica de la minería en el Perú. Lima 1991.

Had import tariffs been low, or had imports been generally allowed, the mineral sector would have been able to profit somewhat from the appreciation of the real exchange rate by importing its inputs from abroad. However, during most of the 1980s, exchange rates for exports and imports differed, and imports were therefore more expensive than they would otherwise have been. Furthermore, imports of products available domestically were subject to non-tariff measures making imports practically impossible. Following a liberalization in 1980, when the proportion of tariff lines subject to non-tariff measures was reduced from 25 to 2 per cent, non-tariff measures were reintroduced in late 1985, bringing the proportion of tariff lines subject to such measures to 39 per cent. For 10 per cent of tariff lines, imports were prohibited. The incidence of non-tariff measures then increased gradually, eventually comprising all items, until late 1989 when 80 per cent of the measures were lifted. When allowed, imported inputs were subject to high tariffs. The arithmetic average of tariffs increased from 39 per cent in 1980 to 70 per cent in 1988[23]. Table 17 shows the effective rates of protection for various sectors in 1963, 1973, 1982 and 1988. The high rates of effective protection for chemicals and capital goods, both of which account for large portions of mineral sector purchases, deserve to be noted.

Table 17 Effective tariff protection for selected sectors, per cent

Sector	1963	1973	1982	1988
Mining	-3.0	-4.2	-4.6	-12.3
Base metals	-2.6	-1.9	-1.5	-5.2
Petroleum	-5.4	-3.8	-1.5	-1.9
Steel	2.4	97.5	43.9	74.6
Agriculture and livestock	0.2	27.3	18.6	29.4
Food, beverages and tobacco	8.6	89.1	117.1	57.2
Chemicals	7.1	60.4	40.0	66.9
Other manufactures	15.9	91.5	54.0	63.3
Capital goods	3.8	55.4	51.2	77.3
Average, all sectors	26.3	48.9	48.0	65.5

Source: G.R. Rossini, A.A. Armas, F.L. Palacios: El Sesgo Antiexportador de la Política Comercial Peruana: Un Estudio de Protección Efectiva a la Minería. IDEM, May 1989. Quoted in C.López Cisnero: Perú: Diagnóstico de la Minería 1950-1988. Lineamentos Generales para su Desarrollo. Instituto Nacional de Planificación. Lima, February 1990.

Another factor that contributed to raising prices of inputs was the price segmentation policies practiced by state owned enterprises. For instance, large scale mining companies paid 50 per cent more for fuel oil than other consumers[24].

In the case of state owned enterprises, inputs were made more expensive as a result of extremely complicated purchasing procedures. All purchases have to be made through competitive bidding. The time required for the bidding process is at least 32 weeks, and in the case of Centromin, the average time has been 57 weeks[25].

5.5 Taxation

As is seen from table 18, tax payments by the mineral sector as a proportion of sectoral GDP decreased during the 1980s, albeit from very high levels at the beginning of the decade. Compared to the situation in other mineral producing developing countries, Peruvian taxes on the mineral sector were still high towards the end of the period, particularly as a proportion of value added, and it appears reasonable to assume that they constituted a significant financial burden on companies[26]. The incidence of taxation on the mineral sector remained higher than the national average even during those years when the sector as a whole showed losses.

Table 18 Composition of mineral sector tax payments and total payments as a percentage of sectoral GDP

Year	Per cent of total mineral sector tax payments				Total tax % of sector GDP	National average, taxes in % of GDP
	Corporate income tax	Property tax	Indirect taxes	Export import taxes		
1980	28.0	1.6	32.5	38.0	55.1	17.1
1981	5.5	5.3	45.0	44.3	34.1	14.0
1982	11.0	1.7	49.1	38.2	30.4	13.9
1983	29.4	0.1	39.8	30.7	25.4	11.6
1984	24.4	0.8	65.4	9.5	22.7	12.5
1985	33.4	0.0	55.2	11.4	20.1	14 5
1986	9.8	1.9	67.9	20.4	19.0	12.0
1987	34.7	0.7	41.6	23.0	14.0	9.0
1988	55.7	1.0	36.2	7.1	31.9	9.1
1989	62.7	0.6	36.7	0.0	20.0	5.9

Source: Instituto de Estudios Económicos Mineros: La importancia económica de la minería en el Perú. Lima 1991.

The methods of taxation deserve some comment. As is seen from table 18, a high proportion of the taxes paid were indirect taxes, including taxes on imports and exports. The reliance on indirect taxes did not recognize the importance of variations in mineral and metal prices and the fact that the mineral sector is a price taker, that is, companies have very little control over the pricing of their products. Changes in taxation rates can not be passed on to consumers. Mineral sector companies had to pay almost the same amount of taxes in downturns of the price cycles as in upturns, making it very difficult for them to build up reserves. Furthermore, the construction of the indirect taxes as sales taxes rather than as taxes on value added, meant that companies were being taxed - through taxes on domestic sales and (in most years) on exports - on the value of their global output with no possibility of deductions for taxes paid on inputs. When prices on inputs increased, value added was squeezed between taxes on inputs and taxes on output. As seen from table 13 above, indirect taxes nevertheless decreased as a proportion of earnings in 1987 and 1988 as a result of lower fuel taxes.

5.6 Security and labour conflicts

As already mentioned (see section 4 above), labour conflicts are common in Peru. At times , they have resulted in significant losses of production. In 1988, strikes resulted in a loss of

output of 120 000 tons of zinc and 100 000 tons of copper, or 23 and 25 per cent respectively of 1987 production[27]. Terrorist activities have also resulted in loss of production, in particular since the Sendero Luminoso guerrillas have often targeted mining installations and infrastructure used by the mineral sector, such as railways and power lines, for attacks. Furthermore, companies have to pay private security companies to guard the installations. Labour market unrest and terrorism have of course also had the effect of deterring investors, both foreign and domestic, from investing in the mineral sector.

5.7 Summary

This section has attempted to discuss the reasons underlying the poor performance of the Peruvian mineral sector during the 1980s. It can be concluded from the discussion that four major causes of the industry's financial deterioration and lack of expansion can be identified:

-macro-economic policies, in particular the management of the exchange rate, which diminished the domestic purchasing power of mineral sector income;

-trade policies, in particular the high degree of protection given to domestic suppliers of inputs to the mineral sector, leading to rapid increases in the industry's domestic costs; and

-taxation, in particular the reliance on indirect taxation which disregarded the change in the industry's profitability.

Other factors, which were probably of less importance as direct causes of the industry's crisis, but which contributed to the deterioration, were labour conflicts and terrorism, which led to loss of production and deterred investment, the labour legislation, which made it difficult for companies to adjust employment in response to technical change and changing market conditions, thus leading to slow productivity growth, and the shortage of capital, which blocked investment.

Notes

1. Unless otherwise indicated, information about companies in this section has been supplied by the companies concerned.

2. See Annex 1, section 2, for a brief description of the regionalization laws. Subsequently, legislation has been passed that obliges regional governments to return shares in enterprises that were taken over.

3. Metal Bulletin Monthly, London, July 1992.

4. Mining Journal, London, 22 January 1993.

5. Metal Bulletin, London, 17 June 1993.

6. Metal Bulletin, London, 2 November 1992.

7. Mining Journal, London, 20 August 1993.

8. See note 2.

9. American Metal Market, New York, 19 November 1992, and Mining Journal, London, 4 December 1992.

10. Mining Journal, London, 6 December 1991; and American Metal Market, New York, 2 January 1992.

11. R. Thorp and G. Bertram: Peru 1890-1977: Growth and Policy in an Open Economy, New York 1978.

12. Based on figures in UNCTAD: Commodity Yearbook, 1993.

13. O. Posadas Perales, President of Centromin: Presentation made to Colegio de Ingenieros del Perú, Capitulo de Minas. Lima, 1990.

14. Information according to Southern Peru Copper Corporation.

15. Instituto Nacional de Estadistica: Perú: Compendio Estadistico 1989-1990. Lima, September 1990.

16. Calculated from figures in Instituto Nacional de Estadística: op. cit.

17. Chile's share of total world copper exports grew from 20 to 26 per cent between 1980 and 1989. While its market share increased at all stages, the increase was largest for refined copper.

18. Instituto Nacional de Estadistica: op. cit. The figures for the fourth major state owned enterprise, Tintaya, are confusing, probably because of an error in the statistics.

19. Ministerio de Energía y Minas: Perú: Desarrollo Económico y Social Basado en su Minería. Una Propuesta Preparada por la Industria Minera del Perú y la Comisión Consultativa del Ministerio de Energía y Minas. Lima, 1990.

20. K. Takeuchi, J.E. Strongman, S. Mzeda and C.S. Ten: The World Copper Industry: Its Changing Structure and Future Prospects. World Bank Commodity working Papers 15, World Bank, Washington D.C. 1987.

67.

21. Calculated from figures in Ministerio de Energía y Minas: Anuario de la Minería del Perú. Lima, December 1989.

22. Calculated from figures in Ministerio de Energía y Minas: op. cit. 1989.

23. Information on tariffs and non-tariff measures from Banco Central de Reserva del Perú: Memória 1989.

24. Southern Peru: Informe trimestral. Lima, May 1991. Although the figure quoted refers to 1991, similar discrepancies in prices were in existence also in earlier years.

25. O. Posadas Perales: op. cit.

26. Compared to other countries, the high incidence of taxation on the mineral sector in Peru has been less due to high corporate income tax rates than to the absence of measures designed to take the specific characteristics of the mining industry into account. Such measures, common in other countries, include accelerated depreciation, possibilities of carrying losses forward for tax purposes and reclamation of import duties and sales taxes paid on inputs necessary for exported production. See Coopers & Lybrand: Mining Taxation: A Global Survey, Washington D.C., 1991, for an overview of taxation on mining in a large number of countries.

27. Financial Times, 3 March 1989.

IV. ROLE OF THE MINERAL SECTOR IN THE NATIONAL ECONOMY

1. TRANSFERS OF INCOME FROM THE MINERAL SECTOR TO OTHER SECTORS

1.1 Background

Economic development in Peru has relied on the mineral sector to generate foreign exchange earnings which have then been transferred to other sectors of the economy through the mechanisms of the exchange rate, tariffs and taxation. The main beneficiaries of this transfer have been protected industry producing for the domestic market, the service sector and the central government. The industrialization and development policy followed focused on the building up of import substituting industry, while the development of exporting sectors, including the mineral sector, was largely ignored. While the emphasis has differed between different administrations, with the García administration being the most radical representative of the policy described, the general framework of policy remained more or less unchanged until the advent of the structural reforms initiated under President Fujimori beginning in 1990.

As seen from Chapter III, the mineral sector experienced a crisis of production and profitability during the 1980s, to a large extent as a result of economic policies which reduced the value of its income in domestic currency terms and raised its operating costs. By the end of the 1980s, the mineral sector's contribution to the rest of the economy had been reduced dramatically. In the following, the relations between the mineral sector and the rest of the Peruvian economy and the mechanisms through which income was transferred are briefly discussed with a particular focus on developments during the 1980s.

1.2 Exchange rate and tariffs

Two of the most important mechanisms by which resources have been transferred from the mineral sector to the rest of the economy are the exchange rate and the high rate of protection for domestic industries. As was seen in chapter III (see table 16 above), the real exchange rate appreciated during the 1980s, except for brief periods in 1983 and 1985 when major devaluations were carried out. This created increasing difficulties for the mining and metals industry to retain a surplus of income, which is mostly denominated in foreign currency, over its costs, which are to a large extent denominated in domestic currency. The general problem of the delay in the adjustment of the exchange rate to the decreasing purchasing power of the domestic currency was exacerbated by a policy of multiple exchange rates pursued by successive administrations, with traditional export industries penalized by less favourable exchange rates than non-traditional exporting or importing industries. The impact of the real

exchange rate appreciation on costs was reinforced by the protectionist policy followed with a high incidence of non-tariff measures and high tariffs (see section 5.4.2 and table 17 in chapter III).

Table 19 Purchases from other sectors by the mining and metal industries in 1988

Sectors from which inputs were purchased	Mining, % of total earnings		Metal production, % of total earnings	
	Without protection	With protection	Without protection	With protection
Mineral extraction	0.2	0.2	33.0	33.0
Crude and refined petroleum	7.0	7.0	11.1	11.1
Steel	3.0	4.2	0.1	0.2
Food, beverages and tobacco	0.4	0.5	0.0	0.0
Chemicals	4.6	6.3	1.2	1.7
Other manufacturing industry	1.5	2.4	0.6	1.0
Capital goods	3.7	9.4	0.5	1.4
Services	25.2	33.2	14.4	19.0
Other sectors	0.7	0.8	4.2	4.2
Total, % of earnings	46.3	64.0	65.1	71.6
Total, million US dollars	415.9	574.9	570.9	627.9

Source: Calculated from G.R. Rossini, A.A. Armas, F.L. Palacios: El Sesgo Antiexportador de la Política Comercial Peruana: Un Estudio de Protección Efectiva a la Minería. IDEM, May 1989. Quoted in C.López Cisnero: Perú: Diagnóstico de la Minería 1950-1988. Lineamentos Generales para su Desarrollo. Instituto Nacional de Planificación. Lima, February 1990.

Various calculations have been made of the value of the total transfer of income from the mineral sector to the rest of the economy. Table 19 shows estimates of the value of total purchases by the mining and metals industries from other sectors in 1988 with and without protection. The difference provides an estimate of the total value transferred to other sectors through tariffs and multiple exchange rates. As seen from the table, 159 million US dollars were transferred from the mining industry and 57 million dollars from metals production. This means that value added would have been 50 per cent higher in mining (53.7 instead of 36 per cent of total earnings) and 23 per cent higher in metal production (34.9 instead of 28.4 per cent of total earnings) had the tariffs and multiple exchange rates not been in force. The same study estimates that 134 million dollars were transferred

from mining and 87 million dollars from metals production as a result of delays in the adjustment of the official exchange rate. It should be noted that the estimates are based on the input/output tables for Peru in which technical coefficients date from 1979. Accordingly, the results have to be interpreted with some caution. Another study estimates the total mining industry loss due to exchange rate policies over the period 1950 to 1988 at between 3 760 million and 7 020 million dollars (at 1979 prices) depending on the method used[1]. This study puts the total loss of all exporting sectors at between 8 475 million and 15 700 million dollars, while another study places the loss of all exporting sectors from 1950 to 1987 at 10 658 million dollars[2].

1.3 Government income

During the 1980s, the mineral sector on average contributed 12 per cent of total tax income. Traditionally, the mineral sector has accounted for a major share of government income, and the decline in sector revenues contributed significantly to the budget deficit since the government was unable to make rapid adjustment. Table 20 shows the share of the mineral sector for various types of taxes. While the mineral sector's share of total taxes declined during the first part of the 1980s, it rose again in the last two years of the decade. Taxes paid by the mineral sector as a proportion of total sales declined during the period, although by less than the national average.

Table 20 Share of mineral sector tax payments of total tax income, per cent

	Corporate income tax	Tax on capital	Indirect taxes	Import taxes and duties	Total
1980	26.2	13.2	22.5	66.9	27.2
1981	3.3	15.8	12.2	25.2	12.3
1982	4.9	3.9	8.5	17.2	8.8
1983	24.9	0.3	10.7	23.6	15.1
1984	18.1	3.0	14.6	5.6	12.3
1985	25.7	0.0	9.1	5.4	9.9
1986	1.8	1.7	5.3	4.2	4.2
1987	8.8	0.8	3.7	5.5	5.0
1988	34.5	2.4	8.6	7.3	13.6
1989	48.3	1.8	6.9	0.0	12.0

Source: Instituto de Estudios Económicos Mineros: La importancia económica de la minería en el Perú. Lima, January 1991.

In this context, it should be noted that the state owned mining companies, after a period of major, mainly internally financed, capital investment from 1978 to 1983[3], made a net contribution to the government in most years during the rest of the 1980s. Almost all other public sector enterprises needed transfers from the government during the late 1980s and accounted for a large part of government borrowing[4].

As regards the use of government income from the mineral sector, it is clear that very little has been returned to it in the form of government services. The scope of the present study does not allow an analysis of public spending in Peru over the past several years. Nevertheless, it deserves to be noted that the efforts to reduce government spending did not appear to have led, at least not during the last years of the 1980s, to a redistribution of the spending in favour of productive activities. Gross fixed capital formation as a percentage of total public sector spending actually decreased somewhat during the 1980s[5]. Transfers to non-mining public sector enterprises, local governments and others, was the only major government budget item that increased in real terms during the 1980s[6].

2. LINKAGES WITH OTHER SECTORS

The mineral sector's linkages to other sectors can be studied through input/output analysis. In the case of Peru, the basic input/output table was produced in 1979. It was subsequently updated in 1985, although the update includes a smaller number of sectors (45 instead of 65). It should be noted that changes in tariffs and indirect taxes probably had a significant impact on relations between the different sectors, in particular during the last few years of the 1980s. The discussion in the following draws on the results of two recent studies, by Instituto de Estudios Económicos Mineros (IDEM) and Grupo de Análisis para el Desarrollo (GRADE) respectively, both of which used the same basic methodology, the sector elimination method, but with slight differences in approach[7]. The method employed calculates the total linkages of the mineral sector as the difference between total linkages generated in the economy with and without the mineral sector under the assumption that in the absence of the sector, its inputs to other sectors would be replaced by imports. In both studies the mineral sector is defined as mining and non-ferrous metal production, thus excluding the steel industry and non-metallic minerals production.

The study by IDEM shows total linkages of the mineral sector as 3.74 in 1985, that is, each unit of currency generated in the mineral sector results in total production worth 3.74 units (see table 21). Of this, 0.92 results from the mineral sector's demand for inputs, 1.0 is attributable to the sector itself (the original unit) and 1.82 occurs in industries using the products of the mineral sectors. The GRADE study arrives at a higher estimate of total linkages, or 4.10, possibly because it is based on the 45 sector input/output table, while in the IDEM study the

reduced table for 1985 was recalculated to include all the 65 sectors in the original table from 1979. The GRADE study, although it does not give an explicit breakdown between backward and forward linkages, appears to give higher values to the backward linkages, judging from the high value given to the mineral sector's linkages with itself (2.48). The mineral sector has more or less the same rank in terms of total linkages among all the sectors in both studies, or number 10 in the IDEM study and number 13 in the GRADE study, which can be considered as high[8]. The highest ranking sectors in terms of linkages are commerce, agriculture and livestock, petroleum, ground transportation and basic chemicals. It should also be noted that the steel industry has a high ranking of 9.

Table 21 Production linkages for economic activities in order of importance, 1985

Sector	Backward linkages	Forward linkages	Total linkages
1. Commerce	1.55	7.31	8.86
2. Agriculture and livestock	1.49	5.71	7.21
3. Petroleum extraction	2.05	4.98	7.04
4. Ground transport	1.65	5.11	6.75
5. Basic chemicals	2.16	2.11	4.27
6. Spinning and textiles	2.51	2.22	4.73
7. Services to enterprises	1.43	3.26	4.69
8. Paper and cardboard	2.58	2.05	4.63
9. Steel	2.16	2.11	4.28
10 Mining and metals	1.92	1.82	3.74
65. Public education	1.06	0.00	1.06

Source: Instituto de Estudios Económicos Mineros: La Importancia Económica de la Minería en el Perú. Lima, January 1991.

The sectors with which the mineral sector had the strongest linkages in 1985 were electrical machinery and equipment, other manufactured products, metal manufactures, steel production and basic chemicals[9]. This reflects both backward and forward linkages. The mineral sector used 29 per cent of the total electricity production (with 75 per cent of the sector's consumption generated by the sector itself), 9 per cent of services to enterprises and 3 per cent of ground transportation. It was also the principal intermediate consumer of petroleum and derivates, and a major consumer of basic chemicals. Despite the fact that most of the sector's production is exported, it is important as a supplier of inputs to other sectors of the

domestic economy. It supplied 46 per cent of domestic inputs to construction of electric machinery and equipment, 31 per cent to "other manufactures" and significant proportions to other industries[10].

The IDEM study describes the development of linkages over time. Backward linkages decreased from 0.81 in 1973 to 0.65 in 1979 and then increased to 0.92 in 1985. The reason for the decrease between 1973 and 1979 is the high metals prices in 1979, which result in an underestimation of backward linkages and an overestimation of forward linkages. Forward linkages increased from 0.69 in 1973 to 2.28 in 1979 and 1.82 in 1985.

It is clear from the development of linkages over time that the mineral sector became increasingly more integrated with the rest of the economy. This development must, however, be seen in the light of the protectionist policy pursued. Some backward linkages have been established because of necessity rather than preference, as a result of strong protectionist measures in favour of domestic suppliers to the mineral sector. The industries built up as a result are not at present competitive on the international market, and following the implementation of trade policy reforms they are likely to lose a great deal of their competitiveness even on the Peruvian market. Nevertheless, these industries may provide a basis for future development and the strong linkages could remain after trade liberalization if the industries are sufficiently flexible and adaptive.

As regards forward linkages, while the major part of mineral sector production is still exported in relatively unprocessed form, downstream processing of metals has expanded. As seen from the relatively high per capita metals consumption (see section 2 in chapter III), production of semifabricated products is more important in Peru than in most other mineral producing developing countries. However, protectionist measures are likely to have had a similar effect as for inputs to the mineral sector, leading to doubts about the competitiveness of these industries following trade liberalization. The use of export taxes in one form of another since 1974 is also likely to have provided an incentive for basic metal producers to increase domestic sales at the expense of exports. The abolishment of these taxes makes the domestic semifabricating industry lose some of its attraction as a customer.

In summary, the mineral sector in Peru has strong production-consumption links to other sectors, and these links have largely been established as a result of government policy. This has undoubtedly had positive effects in terms of diversification of the economy, reduction of sensibility to price shocks originating in the mineral sector and enhancement of skills. On the other hand, to some extent, the linkages have been established at a cost to the economy and it remains to be seen whether the industries created have managed to achieve international competitiveness independently. Furthermore, in many cases they remain dependent on the domestic mineral sector and thus vulnerable to variations of activity in this sector.

Although the mineral sector in Peru accounts for only a small proportion of total employment, it generates significant employment in other sectors. The labour multiplier for the mineral sector has been calculated in the IDEM study at 5.04 in 1985, that is, each job created in the mineral sector generates 4.04 jobs in other sectors of the economy. Of these, 1.59 result from the purchase of domestic inputs, while 2.45 are created in downstream processing. The total employment generated by the mineral sector thus amounts to almost 300 000 persons, or 4 per cent of the economically active population.

As regards more indirect linkages between the mineral sector and the rest of the economy, it should be noted that the mining and metallurgical industry in Peru has played a considerable role in the economic and social development of some parts of the country where other employment is scarce. The importance of the mineral sector is attributable not only to the income it generates in terms of salaries, but also, and in some cases more importantly, to the services provided by mining companies to their employees. These services include education, medical care and housing.

Less easy to evaluate is the positive stimulus given to local and regional economies by the provision of infrastructure. It appears to be generally accepted that this stimulus is of considerable importance, given the low development of infrastructure in general. The justification for the regionalization of government decision making concerning infrastructural investment by the mineral sector is the need to coordinate infrastructural development (see section 1.4 of Annex 1). Furthermore, in an inventory of potential mineral investment projects drawn up by the Ministry of Energy and Mines and the industry, projects were grouped according to "development nodes" (polos de desarrollo), where the mineral projects were seen as providing an economic stimulus and focus to a region[11]. While the infrastructure thus established clearly contributes to improving living conditions of the people in the regions concerned, there is little empirical evidence that economic development has actually taken place as a result of the establishment of mines and metallurgical installations. It could also be argued that the transfer of income to import substituting industries results in the major share of the income generated by the mineral sector leaving the region of production and that the benefits are mainly felt in the more developed parts of the country.

Notes

1. Instituto de Estudios Económicos Mineros: La política cambiaria, el sector minero y la transferencia de excedentes en el Perú. 1950-1988. Serie Estudios No. 1. November 1988. Quoted in C. Lopez Cisneros: Perú: Diagnóstico de la Minería 1950-1988. Lineamientos Generales para su Desarrollo. Instituto Nacional de Planificación. Lima, February 1990.

2. J. Caller, R. Chuecas: Estrategía de desarrollo industrial: algunas reflexiones. Fundación F. Ebert. November 1989. Quoted in C. Lopez Cisnero: op. cit.

3. Grupo de Análisis para el Desarrollo (GRADE): Domestic Management of Export Revenue Instability, Informe Preliminar. Lima, November 1990.

4. Public sector enterprises as a group have showed negative results since 1970, with the loss increasing from around 10 per cent of turnover in the first years of the 1980s to 28.9 percent in 1988 and 18.1 percent in 1989. In 1988, these losses corresponded to 64 per cent of the total public sector deficit (Banco Central de Reserva del Perú: Memoria 1989).

5. Gross fixed capital formation accounted for close to 20 per cent of public sector spending during the first half of the 1980s, but decreased to around 15 per cent in the second half (Instituto Nacional de Estadística: Perú: Compendio Estadístico 1989-1990. Lima, September 1990).

6. The share of transfers in total central government expenditure increased from 13.4 per cent in 1979 to 21.0 per cent in 1989 (Instituto Nacional de Estadística: op. cit.).

7. The sources used were Grupo de Análisis para el Desarrollo (GRADE): op. cit., and Instituto de Estudios Económicos Mineros: La importancia económica de la minería en el Perú. Lima, January 1991.

8. For the sake of comparison, it can be mentioned that the rankings in terms of total backward linkages for different parts of the mineral sector in Indonesia in 1985, among a total of 66 sectors, were 19 for non-ferrous metal production, 38 for coal and metal ore mining and 50 for other mining and quarrying (UNCTAD: The Mineral Sector in Indonesia. Country case study prepared under the MINDEV project, draft).

9. Grupo de Análisis para el Desarrollo, op. cit.

10. Instituto de Estudios Económicos Mineros: op. cit.

11. Ministerio de Energía y Minas: Perú: Desarrollo Económico y Social Basado en su Minería. Una Propuesta Preparada por la Industría Minera del Perú y la Comisión Consultativa del Ministerio de Energía y Minas. Lima, 1990.

V. MINERAL SECTOR POLICIES AND PROBLEMS

1. GOVERNMENT OBJECTIVES

The policies of the present Peruvian administration with regard to the mineral sector have to be seen in conjunction with the reorientation of the general economic policy. While it is obvious that the mineral sector will still have to be relied on for a major part of foreign exchange earnings, efforts are made to restructure the system of distribution of these earnings. During the 1980s, problems arose in all three areas identified in chapter I, that is taxation, macro-economic stability and absorption. The taxation system, while allowing the government to appropriate a large share of the rent generated by the mineral sector, was characterized by a disregard for the mineral sector's need to build up reserves and had the effect of deterring investment. Macro-economic stability was not maintained. Instead, as at various times after the Second World War, the real exchange rate was allowed to appreciate, the budget deficit grew and hyperinflation resulted. The economy could not absorb the revenue from the mineral sector efficiently by creating competitive production capacity, improving productivity in agriculture or developing the infrastructure, and instead it was lost through support to protected industry producing for the domestic market. The system for distribution of export revenue from the mineral sector is now being reformed. Instead of using mechanisms of transfer such as a high real exchange rate, high import tariffs and indirect taxes, all of which undermine the capacity of the mineral sector to continue to generate income in the long term, the focus is on using methods that do not distort micro-economic relationships and that do not impede investment and expansion of production in the sector.

It is obvious that the mineral sector, along with the rest of the Peruvian economy, would benefit from macro-economic stability and a higher rate of economic growth, not least since this would increase domestic demand for the products of the mineral sector and create more favourable conditions for an expansion of downstream processing. From the mineral sector's point of view, the establishment of a rate of exchange that better reflects relative costs has to be seen as a priority, since this sector is for the most part unable to pass on domestic cost increases to its customers. Trade liberalization should also yield substantial benefits for the mineral sector by allowing it a higher degree of freedom in choosing its suppliers, and by subjecting domestic suppliers to competition, which is likely to reduce mineral sector costs. Reduction of the budget deficit through a broadening of the tax base and increased efficiency in tax collection also has immediate benefits for the mineral sector by transferring part of its tax burden to other sectors.

On the basis of discussions held with a number of persons in central positions in government and industry it appears that

the overall government objective with respect to the mineral sector is to improve its competitiveness through productivity increases achieved through cost reductions and investment in new equipment. The instruments used include a change to direct instead of indirect taxation, a gradual re-establishment of cost parity through exchange rate adjustment, promotion of foreign investment through improvement of investment conditions, privatization of most of the operations managed by state enterprises, improvement of labour relations and support to medium and small scale mining.

In the following, past policy is briefly summarized on the basis of the analyses in previous chapters, and the present objectives and the instruments adopted to achieve them are reviewed. It has to be noted that the success or failure of the policies now pursued can only be assessed in the long term. Nevertheless, it is possible already at this stage to discuss the potential difficulties that the implementation of the policies will encounter, as well as other possible methods of achieving the same objectives.

2. REVITALIZATION OF THE MINERAL SECTOR

2.1 Micro-economic policies

In order to revitalize the mineral sector it would seem to be necessary for the government to continue to pursue some of the economic policy changes already initiated, including trade liberalization. The trade policy pursued in the past had the effect of transferring resources from the mineral sector to protected domestic industries. The form that this transfer took (high tariff rates and intensive use of non-tariff measures) led to distortions in the cost structure of the mining and metallurgical industry since it contributed to higher direct operating costs than would otherwise have been the case, resulting in a less than optimal use of resources and disincentives to capacity expansion. The preference given to domestic sourcing of inputs provided a powerful incentive for the establishment of industries producing these inputs whether they were competitive in an international perspective or not. The general reduction of tariff rates and the abolishment of non-tariff trade measures are likely, therefore, to reduce production costs in the mineral sector.

A related issue is the price of inputs supplied by government monopolies, in particular energy. Electricity tariffs vary widely from region to region and are in some cases so high as to effectively discourage the establishment of mining and metallurgical industry[1]. The price of fuel oil, which is sold by a state owned company, is another source of concern to the mineral sector[2].

Regulations concerning foreign currency transactions have been lifted by the current administration. This move is likely to have positive effects in terms of reducing industry costs, for

instance by making possible the taking up of loans abroad at significantly lower interest rates than in Peru. It is also likely to enhance the attractiveness of Peruvian investment projects from the point of view of foreign investors.

Reform of the taxation system is another priority in the context of the revitalization of the mineral sector. It is generally recognized that the mining industry has two characteristics that have to be taken into account when designing a tax system for mining.

The first characteristic is that the optimal rate of extraction of a mineral deposit is directly affected by the level and structure of the taxes imposed on the mining operation in question. A tax which is a simple function of volume produced will have the effect of making the extraction of low grade deposits or parts of ore bodies unprofitable, since it constitutes an addition to direct operating costs. A tax based on the value of the mineral produced or sold will have a similar effect, although modified by the fact that the size of the tax would also depend on the price of the mineral produced. A tax on profits, on the other hand, does not directly affect operating costs, and as a result, it allows the operator to exploit lower grade deposits than would otherwise be the case. This enlarges the inventory of deposits possible to exploit and increases the length of life of both mines and of total national reserves.

The second characteristic is the large variations in mineral and metal prices and demand. If mineral sector companies are to survive the market fluctuations they can not be burdened with the same amount of taxes in downturns of the price cycles as in upturns. It also has to be recognized that the companies need to build up reserves when demand conditions are favourable in order to use these when income declines, since a large portion of their costs are fixed, given the highly capital intensive nature of the industry. This characteristic also argues in favour of taxing profits rather than sales. It also implies that taxes levied on assets are likely to have a disproportionally negative impact on the mineral sector compared to other industries.

In view of these two particular characteristics of the mineral sector, the declared intention of the government to emphasize direct taxes and taxes on profits in the future is likely to have positive effects on the development of the mineral sector.

Another aspect of the taxation system which has created problems in the past is the multitude of exceptions and special regulations, for small mining, for gold mining etc. This has made the tax system difficult to administer and has provided an incentive for the industry to ask for special concessions instead of clear and simple regulations. While special concessions may be necessary in some cases, their effects of course have to be evaluated carefully in order not to create distortions and disincentives.

2.2 Investment conditions and privatization

In order to revitalize the Peruvian mineral sector, investment is needed. Much of the existing equipment is old and in need of replacement, and new projects require major investments. Companies in the mineral sector have been unable to generate investment funds themselves, and increased domestic borrowing is not a realistic alternative in view of the country's economic situation. Consequently, the funds needed will have to come in the form of foreign capital. Although the "reinsertion" of Peru in the international financial community appears to be going ahead as planned, some time will pass before foreign loans become the main financing alternative. It is therefore likely that most of the capital needed will have to be raised through direct foreign investment.

Peru has not been considered by international mining companies to offer attractive investment conditions. Potential international investors in the mineral sector tend to evaluate conditions in a country along five dimensions:

-geological conditions,
-level of costs,
-stability of investment conditions,
-clarity and appropriateness of the legal framework,
-political and personal security.

There is no doubt about Peru's having very favourable geological conditions, as shown by the number of potential projects.

While the level of local costs has been a deterrent, this is rapidly changing as a result of the changes with respect to taxation and trade policies. The government's capability of maintaining a more favourable exchange rate is obviously also of critical importance in this regard. One problem with regard to costs may however be the infrastructural investments required in the case of most new projects.

As regards stability of investment conditions, the record of earlier Peruvian administrations does not inspire the confidence of investors[3], and they are likely to want some assurance that the reforms now under-way remain in force in the future. The new foreign investment law of July 1991, which grants investors legal stability through the recognition of certain guarantees, is likely to improve investors' perception of Peru in this regard (see Annex 1, section 1.3).

Doubts concerning the legal framework had focused on its clarity and permanence. According to one study[4], over the 20 years up to 1991, 273 laws and 727 decrees concerning the mineral sector were issued. The frequent changes and the resulting complexity of the legal framework of course causes concern to investors. The lack of unambiguous guidelines regarding the implementation of environmental regulations (see Annex 2, section 1.5) is another example of a factor that may deter investment.

Finally, the terrorist activity has obviously detracted from Peru's attractiveness from the point of view of foreign investors, in particular since mining installations have often been the target of attacks. Recent government progress in the fight against terrorism are however likely to have somewhat alleviated investors' concern.

A measure of the extent to which investor confidence has improved is the success of the privatization programme. The prices received for the first two operations to be privatized, the Condestable mine and the Quellaveco copper deposit, were relatively low[5]. In the case of Quellaveco, however, the buying company committed itself to a very ambitious investment programme. Subsequently, Hierro Perú was sold at what was generally considered a very good price, the Yanacocha gold mine project was launched with the participation of foreign investors[6], and the international mining industry demonstrated a major interest in the privatization of Centromin[7]. All this appears to show that confidence in the Peruvian government's policies is high among investors.

2.3 Structure of the mineral sector

The present structure of the mineral sector in Peru has to a large extent been determined by direct government intervention. Private domestic industry played a subordinate role from the beginning as large scale projects were developed first by foreign companies under government concessions and then taken over by the state in the 1970s. More recently, major projects such as Tintaya were developed by the state owned enterprises. There was never any attempt to stimulate the establishment of major domestic mining and metallurgical companies in the private sector, and recent administrations appeared to consider the mineral sector a natural state domain. The private sector itself has also mainly been reticent and has taken few ambitious initiatives to expand capacity or move into further processing. The reasons for this lack of ambition are likely to have been the unstable economic and political conditions, the tendency towards appreciation of the real exchange rate which makes exporting companies vulnerable (as long as private companies confine their operations to the mining stage they can sell concentrates to the state owned enterprises and somewhat reduce their exposure to the exchange rate risk) and the difficulty of raising investment funds. The corporate structure of the enterprises concerned may also have played a role, since many of them are conglomerates and may have been unwilling to devote a larger share of their resources to such a high risk business as mining and metals production.

The approach by the present administration differs from that of earlier governments. In addition to a positive attitude to foreign investment, the government has made it clear that it wants to cooperate with the domestic private sector. The purchase of the Condestable mine by a Peruvian company and the participation of another private sector Peruvian company in the Yanacocha gold mine project appears to show that domestic private

sector attitudes towards investment in the mineral sector are beginning to improve.

The changes undertaken in investment conditions and the interest shown so far by international investors in the privatization of the state owned operations could raise doubts whether the government may have gone too far in its openness to foreign investment and whether domestic interests will be able to retain a significant share of the industry. The interest of foreign investors is however likely to continue to be focused on large scale operations, where domestic enterprises would in any case find it difficult to raise the necessary investment funds. Furthermore, foreign investment will bring with it the introduction of new technology, not least in the field of environmental control, which in the long term is likely to yield benefits also for the domestic industry.

In many developing countries, the mineral sector consists of only two categories of companies: the very large ones, usually owned either by the state or by foreign investors, and very small, domestic owned operations, often working on an artisanal scale. Medium sized companies are largely absent, and it is often argued that this reduces the growth prospects of the industry. This phenomenon has been termed "the missing middle". Peru has a more even distribution of sizes of operations than most developing countries, including a large number of medium sized companies. However, a policy aiming to maximize the contribution of the mineral sector to economic development should attempt to identify the actual and potential importance of the particular contributions of each segment of the industry, to develop means to enhance these contributions and to assure that each segment is given opportunities to expand that are consistent with their respective contributions. Table 22 attempts to summarize the effects of the activities of each segment of the Peruvian mining and metallurgical industry on several economic parameters. Each segment's effect on a particular parameter is ranked from negligible to large, relative to the total turnover of the segment.

While the table only indicates the probable relative importance of effects, it nevertheless illustrates some important differences between the different segments of the mineral sector. The main effects of the large scale operations on the rest of the economy are their contributions to export income, government revenue and establishment of physical infrastructure. They are relatively less important in terms of employment since they use mainly highly mechanized production methods. Forward linkages are believed to be of relatively little importance since most of their output is exported, and their impact on rural development is limited since the number of operations is small (each individual operation is of course of major importance to the area where it is located). Small scale mining is shown to have an almost opposite profile. Its main contributions fall in the areas of employment and rural development, since these operations tend to use labour intensive methods and provide one of the few activities generating cash income in the countryside. On the

other hand, its importance for government revenue is negligible, and its contribution to physical infrastructure and health and education is small, since the operations usually can not bear the cost of establishing infrastructure or providing the services. Medium scale mining falls in between the two extremes, although its importance to employment and rural development is likely to be greater than for large scale mining. This segment may also be the most promising with regard to the strengthening of production/consumption linkages.

Table 22 The Peruvian mineral sector's contribution to economic and social development

Effect on:	Large scale mining	Medium scale mining	Small scale mining
Export income	Large	Large	Medium
Government revenue	Large	Small	Negligible
Employment	Small	Medium	Large
Physical infrastructure	Large	Medium	Small
Health, education	Medium	Medium	Small
Backward linkages	Medium	Medium	Medium
Forward linkages	Small	Medium	Medium
Rural development	Small	Medium	Large

While the continued existence of a mineral sector that is balanced in terms of size structure should probably be a government objective in itself, the government may also want to emphasize the development of a particular segment in order to achieve particular policy objectives. Thus, the relatively favourable conditions accorded to small scale mining should be seen against the background of this segment's importance to rural development. The medium size mining sector has received relatively little attention from successive Peruvian governments, in particular relative to its potential importance for the establishment of production/consumption linkages. The medium size segment is dominated by domestic private enterprises, and as has already been mentioned, these enterprises have shown little inclination to expand production or move into further processing. If a government objective is to establish a strong domestic presence in the mineral sector and to use this sector to stimulate growth, then it would seem advisable to attempt to improve the conditions under which this segment operates. Much has already been done in this respect in the context of the general economic reform programme, but the need to improve the industry's access to investment funds may require further attention.

2.4 Government support to the mineral sector

Given the general direction of the present administration's policies, it would be expected that direct support from the government to the industry would be excluded in most cases. In three areas, however, there may be clear justification for such support.

The first area concerns small scale mining. This segment of the industry has traditionally benefitted from special treatment with regard to taxes and some government regulations in view of its importance to employment in some parts of the country, and it appears that the present administration is planning to continue these policies. Similar policies are also followed in many other countries with significant small scale mining activity. However, a distinction needs to be made between mining which, although small in scale, is conventional with regard to the methods used, and artisanal mining, which uses other methods. In the case of the first category, it can be reasonably argued that government support should be directed towards extension services of a technical assistance nature and, in the absence of a well-developed banking system, provision of finance and/or guarantees. As has already been mentioned, the Banco Minero, which financed small scale mining, has had to cease its activities. The establishment of a replacement is now being considered, but that should be combined with provision of technical assistance in order to prevent a repetition. It is however difficult to see a justification for giving preferential tax conditions to small mining companies, in particular if the general taxation system is made more adequate to the needs of the mineral sector, and if general economic conditions improve (small mining companies, given their cost structure, probably have suffered more than proportionately from the appreciation of the real exchange rate and the high domestic price level). Thus, it may be preferable to make any tax concessions temporary in nature, to help the small mining industry to survive the present period of low base metal prices, and to abolish them when conditions become more stable.

In the case of artisanal mining, on the other hand, a simplified and preferential tax treatment may be necessary, partly because of the difficulty in collecting taxes and the limited revenue obtained. The government may also be concerned that the artisanal mining not be too burdened with taxes in view of its significant contribution to employment in certain areas. In this case as well, technical assistance along with some regulation of the activities is probably called for, mainly to avoid environmental damage, high-grading of deposits, and infringement on mining rights held by formal sector companies, and to improve workers' health and security.

The second area where the government is clearly in a position to provide useful support is geological mapping, large scale reconnaissance and exploration and mineral resource assessment. The government intends to intensify exploration. This raises the question of the financing of the Instituto Geológico

Minero y Metalúrgico (Ingemmet, see Annex 1, section 2). At present, Ingemmet is financed by the whole sector, except the gold mines. The state owned enterprises have, however, been given preferential access to exploration results. In the context of the reform of mining legislation, it is intended to change these provisions so that the results of Ingemmet's work will be made available to all enterprises. Interested parties would probably pay for the information, with prices established through a bidding process. This is expected to ensure both a stable income for Ingemmet and optimal utilization of exploration results. The possibility of having Ingemmet undertake work directly for mining companies on a commission basis with regard to exploration and engineering studies is also considered in this context. Another possibility that could be considered is for Ingemmet to have a role to play in the preparation of environmental impact assessments and in advising regional governments in cases of conflicting land uses, in particular by providing detailed mineral resource assessments.

A third area where government support may be necessary is infrastructural investment, in particular in power generation and transmission. At present, three quarters of the power used by the mineral sector is generated by the sector itself. While investments of this kind can scarcely be borne by the government budget at present, it may be preferable in the long term for the government to assume increased responsibility for power generation, in particular to ensure coordination of projects and a better allocation of resources. At present, the government's ability to influence investment in power generation is of necessity limited, since it does not pay the costs. Moreover, the requirement that infrastructural investments be financed by the mineral sector investor adds to the need for external funds. Projects which could have borne the costs of the investment had it been the subject of a firm contract with the national electricity authority at rates reflecting the costs, may not be able to raise the funds needed if it has to be part of the original investment. The possibility of crediting infrastructural investment against the corporate income tax is of some help, but may not always be sufficient. Accordingly, this matter will continue to need the close attention of the government.

3. PROMOTION OF LINKAGES

As seen from the review of linkages in section 2 of chapter V, the Peruvian mineral sector has well-developed linkages to the rest of the economy, and it would not be correct to describe it as an "enclave". Nonetheless, some of the links, in particular to domestic industry producing inputs to the mineral sector, may come under strain as a result of the trade liberalization reforms. While in the short term the mineral sector could probably obtain cheaper inputs from other sources, the long term effect may be less beneficial, since the sector might become overly dependent on imports and supply networks may be broken up. Consequently, care has to be taken that the networks of suppliers and of downstream processors are not lost in the process of

structural reform. This is easier said than done, however, in view of the government's commitment to avoid attempts at fine tuning of the restructuring process. The hopes of the government seem to be attached to a re-establishment of economic growth and that this would increase demand for domestic inputs as well as for outputs from the mineral sector.

It might therefore be in the interest of the sector concerned and of the government to look at possibilities of strengthening the cooperation between the mineral sector on one hand and its suppliers and customers on the other. The formulation of joint research and development projects and joint export marketing efforts may offer some opportunities in this regard. A model may be found in the successful establishment of competitive mining equipment industries based on domestic mining production in countries as diverse as Brazil, Finland and Sweden. In the case of the European countries mentioned, this industry has been able to grow partly because of a very close collaboration with the mineral sector in areas such as technological development, product development and marketing. The Peruvian mineral sector is certainly large enough to offer good prospects for such efforts.

Other actions to promote linkages concern mainly the provision of infrastructure and integration of mining and metallurgical projects into the regional economies. The instruments to assure this are available in the form of the delegation of certain decisions to regional governments. In this connexion, the realization of the potential beneficial effects arising from medium and small scale mining activities in the areas of employment, increased demand for consumer goods that can be provided locally or regionally, and creation of infrastructure should be given a high priority. As already mentioned, the government may in the long term also wish to create a more positive environment for such ventures and to ensure coordination of infrastructural investment by assuming a greater part of the financial responsibility.

4. ENVIRONMENT

The new Peruvian law on the environment provides for very strong enforcement mechanisms and sets extremely ambitious targets. On the other hand, the determination of limits and standards is left to sectoral authorities, and the standards have not yet been established. It is of course important that the regulations concerning the implementation of environmental standards are clear and unambiguous and that the standards are set in a way that ensures the industry's active support. While at least the major companies are in the process of preparing plans for pollution abatement, it is clear that they will not be able to fully conform to any standards emerging from the present process for some time. This is the case in particular for the presently state owned enterprises. Most of their machinery and equipment is old and contributes disproportionately to environmental damage. When this equipment is replaced, as part

of the process of revitalization of the mineral sector, the gravity of the environmental problems will diminish somewhat, in particular since new equipment for the mining and metallurgical industry is generally standardized with a view to minimize pollution. The need to undertake costly investments in order to reduce environmental damage may also affect the preparedness of foreign investors to take over state owned installations, in particular if rehabilitation of past environmental damage were to be included in their obligations. It is therefore important that the requirements are made clear and that new investors are not faced with open ended commitments.

The environmental situation of medium and small scale operations is less likely to benefit directly from the introduction of new technology, given the shortage of funds for investment in new equipment. In the long term, environmental technology will diffuse to these operations as well. Meanwhile, it is likely that they will need significant technical assistance and possibly positive financial incentives in order to ensure that the desired reduction of pollution takes place.

There are also a number of environmental problems which are inherited from past activities and about which very little can be done. These include the location of tailings dams, both for existing and for abandoned operations. These problems can be dealt with only in the very long term, since any rehabilitation action would be extremely expensive.

Other, less expensive ways of reducing pollution in the short and medium term might be to provide training in the operation of pollution control equipment, and to sensitize personnel at all levels to the importance of reducing pollution[8]. Such efforts are likely to result in significant reduction of pollution at a very low cost.

5. LABOUR RELATIONS

Relations between management and labour in Peru have traditionally been tense and labour conflicts have been common. In recent years, the stagnation of the sector and deteriorating general economic conditions have added to the grievances experienced by the workforce. It is clear that there are no easy solutions to these problems. As the economy improves, and with it, the situation of the mineral sector, a reduction of frictions might be expected. However, part of the problems may arise from the nature of the mineral sector in Peru. Since it provides its workforce not only with their cash income, but also with housing and many other services, there is an abundance of potential areas of conflict, which do not exist in other industries. Furthermore, the only way employees can express demands is through industrial action. Against this background, the transfer of some or all of the services now provided by companies to public authorities, which is reported to be under-way[9], might have the effect of reducing friction between companies and their employees.

Notes

1. Electricity tariffs are reported to vary from 2 to 12 US cents per kilowatt hour. The lower rate is roughly in line with the tariffs paid by large industrial users, such as the metallurgical industry, in most countries, although lower tariffs are common in energy rich countries.

2. According to industry sources, the domestic price of fuel oil in late 1991 was about five times as high as the international price.

3. The drawn out negotiations over the Cuajone project, during which successive governments changed negotiating positions and conditions several times are a case in point. The negotiations have been described in detail in R.F. Mikesell: Foreign Investment in Mining Projects. Cambridge, Massachusetts, 1980.

4. Instituto de Estudios Económicos Mineros: La Importancia Económica de la Minería en el Perú. Lima, January 1991.

5. Mantos Blancos, the company that bought Quellaveco for 12 million US dollars, paid 190 million dollars for a deposit of similar size in Chile shortly before (International Herald Tribune, 20 April 1993).

6. The investors, consisting of subsidiaries of Newmont Mining Corp. (40%), French Bureau de Recherches Géologiques et Minières (26%) and Peruvian Compania Minera Condesa SA (34%), have made an initial investment of 34 million US dollars (American Metal Market, New York, 17 August 1993).

7. 24 companies from 12 countries, including almost all major international mining companies, qualified for a short list of bidders for Centromin (American Metal Market, New York, 10 September 1993).

8. These aspects are highlighted in the guidelines for environmental management in mining prepared by the International Round Table on Mining and the Environment organized by the United Nations Department of Technical Cooperation for Development and the German Foundation for Development in Berlin, Germany, 24-28 June 1991.

9. Metal Bulletin, London, 2 November 1992.

ANNEXES

Annex 1

Legislation and institutions

The present annex is provided as a background to the discussion in the main body of the report. Where possible, recent changes in legislation have been taken into account. However, the situation is changing rapidly, and some of the changes are certain to have been missed.

1. Legislation

1.1 General mining legislation

All mineral resources in Peru belong to the State. Development and exploitation of mineral deposits take place under concessions, of which there are six kinds for different stages and parts of a mining project (exploration, exploitation, treatment, refinery, general works and transport). The exploration concession runs for five years with possibility of extension, while the exploitation concession is in principle for an indefinite period. Concessions are irrevocable, provided that fees (generally small) have been paid, annual reporting obligations have been fulfilled and the minimum amount of work (defined in relation to the size of the reserves) has been carried out. Mining rights can be pledged or mortgaged, which is important from the point of view of raising investment funds.

Mining rights take precedence over other land uses, except in urban areas. Holders of other competing land use rights of course have to be compensated. There appears to have been no major problems in this regard in Peru, in contrast to the situation in many other countries.

The government may establish Special Rights of the State in certain areas. These areas are then excluded from exploration or development activities by other interests.

For the purposes of defining obligations of holders of mining rights, for instance with regard to the payment of taxes, mine operators are divided into three categories:

Large producers: production exceeding 5 000 tons of ore/day
Medium producers: production of 350 to 5 000 tons/day
Small producers: production less than 350 tons/day

There is also the category of Special Mining Companies. These are companies formed by the State together with domestic or foreign private companies and in which the State participates with 25 per cent or more of the capital. The Special Mining Companies have a legal status similar to that of privately owned companies and do not form part of the National Public Sector.

Foreign investment in mining is permitted by law, although the investor has to make a declaration of submission to the laws of Peru. There are no regulations pertaining particularly to foreign investment in the mineral sector.

The Fujimori administration has initiated a programme aimed at reforming the mining legislation and, in particular, creating the conditions necessary for increased private investment. Major features of the new legislation include:

-Stability of conditions relating to taxation, exchange rate and administration;

-A new and simplified system for delimiting mining concessions;

-Simplification of administrative procedures.

1.2 Taxation

The tax legislation applied to the mineral sector in Peru has been, and is, extremely complex. At various times, specific measures applying to all or part of the mineral sector have been introduced, along with exemptions of a more or less temporary nature. The following description can therefore only capture the broad outline.

The mining industry is subject to corporate income tax, the rate of which was lowered in early 1991 from 35 to 30 per cent. There are, however, several exceptions. New projects and expansion projects have been given a tax holiday of five years for mining operations and 15 years for metallurgical installations. Operations in remote areas may also be entitled to special tax credits. Small scale mining companies are exempt from taxes on profits and equity. Special Mining Companies pay corporate income tax at a rate of 26 per cent, and gold mines pay 50 per cent. Exploration and development expenditures are generally deductible. Dividends are taxed as income.

Medium-scale mining companies may be given stable tax conditions for a period of ten years, and large operations may have stability of tax conditions indefinitely.

On domestic sales, companies have to pay the general sales tax at 18 per cent, of which 2 per cent is municipal tax. The same tax rate is applied on imported items. Mining companies that export or sell their products on the domestic market by fixing their prices on the basis of internationally recognized quotations can obtain a refund of any indirect taxes incurred during the production process. This is counted as a deduction against the corporate income tax.

Large scale mining companies also have to pay a 2 per cent tax on assets net of depreciation, which is however deductible against the corporate income tax. Although mining companies are

required by law to provide housing and social and medical care for their employees (see section 1.6 below), they also have to pay the general contributions to the national housing fund (Fondo Nacional de Vivienda) and to social security (1.5 and 3 per cent of wages respectively). Companies also pay land tax and administrative and other fees. Finally, mining companies have to pay 1.5 per cent of profits before tax as a contribution to the budget of the Instituto Geológico Minero y Metalúrgico (Ingemmet, see section 2 below).

Under the reform programme mentioned above, investments in publicly accessible infrastructure continue to be credited against the corporate income tax and investments in housing and other amenities for employees are deductible.

1.3 Regulations concerning foreign investment, imports and exports and currency transactions

A new law on foreign investment was introduced in July 1991. The new law provides for stability as regards taxation, foreign exchange regulations and administrative regulations. Corporate income tax is payable only on dividends, investments in infrastructure and taxes paid during production are deductible, and accelerated depreciation is possible. Remittance of profits is free.

As already mentioned, import and export licenses as well as all quotas or other non-tariff trade measures have been abolished by the present administration. At times during the 1980s import licenses have covered a broad range of products. An earlier requirement that companies could not import inputs if they were available domestically has been lifted by the Fujimori administration. According to industry sources, this rapidly resulted in significant price reductions. The mining industry pays no tariff or sales tax on imported inputs, provided that the production is exported. This applies only to products that are transformed in the production process and not to capital equipment. Small mining companies pay no tax on imported inputs and only a minimal import duty.

Companies are free to export, although state enterprises until the end of 1991 had to use the services of the state owned trading company Minpeco, which charged a commission averaging 1.7 per cent of the sales value. Minpeco used to have a total monopoly on minerals and metals trading, but this monopoly was abolished in 1980. There are now several private minerals trading companies. Recently, Minpeco has had financial difficulties and a major programme of cost reductions has been initiated. The ownership of Minpeco has also been transferred to the two major government owned mining enterprises, Centromin and Minero Perú. Banco Minero had a similar monopoly on gold exports, but this has also been abolished.

The government has also lifted all restrictions on foreign exchange operations. Companies can thus dispose of their foreign

currency income freely, and are no longer required to deposit part of the income with the Central Bank. With the introduction of a uniform exchange rate, mining companies can now convert their foreign exchange earnings to domestic currency at the same rate as other exporters. Earlier, priority exporters (not the mineral sector) benefitted from a more advantageous exchange rate.

1.4 Infrastructure

Mining companies are expected to finance necessary infrastructural investments such as roads etc. This infrastructure has to be open to the general public and the advice of regional governments regarding the location of the infrastructure has to be followed. Because of the lack of infrastructure in the country, these investments can often constitute a heavy financial burden on the company concerned. However, from the government's point of view, it is reasonable that the investor assumes this responsibility and that the government also takes advantage of the opportunity to ensure that the infrastructure is of the maximum benefit to the region. A recent delegation of authority to provincial governments to decide in these matters was justified precisely by the need to ensure coordination of infrastructural investment. As already mentioned, the government plans to retain tax credits for investment in infrastructure.

The government already gives some compensation to companies investing in electricity generating and transmission facilities. Provided that at least 20 per cent of the electricity is allocated for public use, an amount of up to one and a half times the investment can be credited against the company's income tax. The electricity supplied in this manner is purchased by ELECTROPERU.

1.5 Environmental regulations

A new law on the environment, which incorporated various legal provisions that had existed earlier as well as completely new legislation, was introduced through a legislative decree in September 1990[2]. The law is considered to be very strict, in particular since it requires that actions to limit or eliminate environmental damage be undertaken with very short delay and provides for very strong enforcement mechanisms. It has, however, proved impossible to take the necessary actions within the time (180 days) specified in the transitory provisions of the law, and the application of these provisions was therefore postponed until the end of 1990. Subsequently, the period was extended for another 180 days, and the content of the provisions was changed to apply to plans rather than actions. More recently, companies have been given 10 years to comply with the requirements of the law.

The details of the application of the law are, however, not yet clear. In the view of the industry, it is unclear exactly how pollution is defined, and standards have not yet been set. The Ministry of Energy and Mines has been designated as "the competent authority" for environmental matters concerning the mineral sector, and will accordingly be responsible for the establishment of standards and for enforcement of the legislation. A commission with representatives of the various ministries involved has been charged with the task of proposing technical standards for the application of the law.

1.6 Labour regulations

Companies are obliged to provide their employees and their families with the following services:

- -adequate housing,
- -schools,
- -adequate installations for recreation,
- -social welfare, and
- -free medical and hospital assistance insofar as these are not provided by the Instituto Peruano de Seguridad Social.

A transfer of these obligations to public authorities is now under-way.

Mining companies are also subject to the same regulations as employers in general with regard to minimum wages, although the minimum wage in the mining industry is somewhat higher than the general minimum wage. Earlier, workers were also entitled to a 8 per cent share of the enterprises' profits before tax.

Regulations having to do with security of employment have been made less protective of the workers by the present administration, partly in order to facilitate the necessary restructuring of operations in many companies, which inevitably will entail reductions of the workforce. A new law on strikes was submitted to the parliament in 1991.

A system of industry wide wage bargaining was in force for a few years but has now been abandoned. Wage negotiations are now carried out between the local trade unions and individual companies. According to industry sources, this is one of the reasons why the incidence of labour conflicts has been reduced. In June 1991, a strike call by the central trade union was ignored by unions at the large companies and nearly all of the medium and small firms[1]. The government sets limits for wage increases, which are generally observed in the negotiations which take place every six months. As regards state owned enterprises, the government introduced a wage freeze in June 1991. A new law on trade unions is under preparation.

2. Institutions

The central authority in matters concerning the mineral sector is the Ministry of Energy and Mines. In addition to a number of consultative bodies, including the Mining Council, the Ministry has two vice-ministries, for Energy and Mining, and supporting functions under a Secretary General. Under the Vice Minister for Mines, the Directorate General of Mines is responsible for the substantive functions of the Ministry with respect to mining. These include[4]:

-the formulation, together with regional level governments, of national mining policy,

-stimulating technical development,

-formulation of a plan for the use of mineral resources belonging to the public sector,

-coordinating technical assistance activities,

-establishing procedures for support to medium and small scale mining, concluding contracts with large mining operations,

-establishment of norms and procedures for prevention of environmental damage,

-formulation of norms for workers' health and safety, and

-promoting training of the personnel needed by the mineral sector.

The Ministry has regional offices in most of the provinces, which are responsible for the application of the mining law in their respective provinces. However, some of the authority in this regard was transferred to regional governments with, it seems, partly unintended consequences. In particular, some provincial governments decided to transfer the ownership of state owned companies to themselves. These "nationalizations" have later been reversed.

The state enterprises form part of the National Public Sector and their role is defined by the law.

Geological mapping is carried out by the Instituto Geológico Minero y Metalúrgico (Ingemmet), which was formed in 1975 through the merger of two institutes. About 67 per cent of the country has been mapped in scale 1:100 000, although a large proportion of the maps remain to be published. The missing parts are mostly in the northeastern part of the country where the thick quaternary layers make mapping difficult. Ingemmet also carries out exploration work, mining engineering studies, pre-feasibility studies and studies on rock mechanics, mining safety designs, exploitation methods and other technical/economic aspects of mining projects. Ingemmet receives 1.5 per cent of mineral sector

companies' (except gold mines) profits before tax. Since profits in the mineral sector have been low over the past few years, it also receives an allocation directly from the government budget. In latter years, this allocation has accounted for more than three quarters of the regular budget. The regular budget is about 1.5 million US dollars per year, while international cooperation projects supplied an additional 3.7 million dollars in 1990, and 4.5 million dollars in 1991. Ingemmet has about 385 employees, of which 150 professionals.

All deposits found are transferred to the state owned enterprise Minero Perú following a pre-feasibility study. Minero Perú has subsequently relinquished some of these prospects to other companies. The government has the power to declare the non-admission of claims for a period not exceeding five years in selected areas where the government then holds a monopoly on exploration. It can also set aside "reserved areas" for a period not exceeding seven years for the purpose of undertaking exploration directly or indirectly. In both these types of areas, "Special Rights of the State" can be declared, which means that the right to explore is assigned to Minero Perú or another agency of the public sector. According to new legislation, Ingemmet will be the holder of all Special Rights of the State, which will be declared for areas not exceeding 3 000 square kilometers. Ingemmet will be given two years to carry out exploration work. The reserved areas are currently being opened for general exploration, with 40 000 square kilometers so far being released. The objective is to release 50 000 of the 60 000 square kilometers initially designated. Furthermore, Ingemmet will offer the results of its exploration to all enterprises, instead of only to state owned enterprises as at present, the objective being to encourage private investment[5].

Notes

1. Legislative Decree No. 708.

2. Código del Medio Ambiente y los Recursos Naturales. Legislative decree No. 613. Lima 7 September 1990.

3. Mining Journal, London, 21 June, 1991.

4. Ministerio de Energía y Minas: Memoria de Gestión. Lima, July 1990.

5. Information from Ministry of Energy and Mines.

Annex 2

Statistical tables

Table 1 Basic economic indicators for Peru, 1980-1990

	GDP constant prices (1979=100)	GDP per capita constant prices (1979=100)	Inflation per cent per year(a)	Debt service ratio per cent(b)	Terms of trade (1979=100)
1980	104.5	101.9	63.7	28.6	98.9
1981	109.1	103.4	71.0	45.8	86.0
1982	109.3	101.0	67.7	36.7	83.2
1983	95.5	86.0	107.4	20.1	84.1
1984	100.1	87.9	112.9	17.4	83.4
1985	102.4	87.4	167.2	16.3	76.4
1986	111.9	93.2	73.0	14.7	66.4
1987	121.3	98.6	82.3	11.7	74.5
1988	111.8	88.4	606.3	4.3	76.1
1989	98.8	77.3	2596.5	4.0	75.9
1990	94.0	E72.0	7650.0	5.4	66.4

(a) GDP deflator
(b) Interest and amortization/exports of goods and non-financial services. Does not include interest arrears.
E=estimate

Sources: Instituto Nacional de Estadística: Oferta y Demanda Global Peru:
1980-1989, Lima, April 1990; 1990, Lima, May 1991; and:
Compendio Estadístico 1989-1990, Lima, September 1990
Banco Central de Reserva del Peru: Memoria 1989
Ministerio de Economía y Finanzas

Table 2 Distribution of GDP among activities, percentage shares at current (A) and at constant (B) 1979 prices

Activity	80A	85A	90A	80B	85B	90B
Agriculture and livestock	9.7	8.8	6.0	9.9	11.6	13.0
Fishery	0.5	0.6	0.6	0.5	0.8	1.2
Mining and quarrying	15.2	9.9	2.2	12.9	12.7	9.9
Manufacturing	20.2	24.3	26.6	23.8	21.8	21.6
Construction	5.5	7.1	7.0	5.5	4.6	5.9
Government	7.7	8.1	4.7	6.4	7.9	7.0
Other	41.0	41.2	52.9	41.0	40.7	41.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

Sources: Instituto Nacional de Estadística: Oferta y Demanda Global 1980-1989, Lima, April 1990; and 1990, Lima, May 1991.

Table 3 Central government operations, per cent of GDP

	1980	1983	1985	1987	1988	1989
Current revenue	17.0	12.0	14.9	9.0	9.2	5.5
Tax income	16.9	14.1	14.3	9.1	9.2	5.9
Income taxes	5.0	2.1	1.8	1.8	2.0	0.9
Taxes on capital	0.5	0.4	0.4	0.4	0.5	0.2
Import duties	2.6	2.3	3.0	1.9	1.3	0.9
Export duties	2.0	0.3	0.3	0.0	0.1	0.1
Taxes on production and consumption	6.3	6.2	8.2	4.7	4.7	3.0
Other tax income	0.5	0.4	0.6	0.3	0.6	0.8
Other current revenue	0.1	0.3	0.6	-0.1	0.0	-0.4
Current expenditure	15.0	16.3	14.4	12.3	10.5	7.4
Remuneration	4.0	4.4	3.9	4.0	3.2	2.5
Goods and services	0.6	0.8	0.9	0.7	0.7	0.5
Transfers	2.7	2.3	1.8	2.9	2.4	2.0
Interest	3.6	4.5	4.3	1.8	2.3	1.0
Defence	4.1	4.3	3.5	2.9	1.9	1.4
Capital expenditure	4.3	3.2	2.7	2.4	1.5	1.8
Gross capital formation	3.0	2.9	2.4	1.5	1.1	1.2
Other	1.3	0.3	0.3	0.9	0.4	0.6
Capital revenue	0.0	0.0	0.1	0.0	0.0	0.0
Deficit	2.3	7.5	2.2	5.7	2.8	3.7
Financing						
External	0.6	4.0	2.7	0.7	1.4	0.9
Domestic	1.7	3.5	-0.5	5.0	1.4	2.8

Source: Banco Central de Reserva del Perú: Memoria 1989

Table 4 Economically active population over 15 years of age, by activity (per cent)

Activity	1980	1985	1990
Agriculture	39.8	36.6	34.0
Mining*	2.0	2.2	2.4
Manufacturing	11.6	10.4	10.5
Electricity	0.3	0.3	0.3
Construction	3.9	3.7	3.7
Commerce	13.1	14.3	15.6
Transport	4.4	4.3	4.4
Financial establishments	2.5	2.5	2.4
Services	22.4	25.7	26.7
Total	100.0	100.0	100.0

* Includes non-metallic minerals mining and petroleum extraction

Source: Instituto Nacional de Estadística: Perú: Compendio Estadístico 1989-1990, Lima, September 1990

Table 5 Physical production indices for manufacturing production (1979=100)

Industry branch	1980	1985	1987	1989	1990(a)
Food, beverages, tobacco	101.2	99.2	131.4	101.1	96.2
Textile and leather	102.3	95.1	109.3	100.6	86.7
Basic chemicals	104.1	104.3	133.0	90.1	86.4
Petroleum refining	104.3	82.0	85.2	77.7	77.4
Non-metallic mineral products	109.2	95.7	180.0	107.8	104.4
Iron and steel	102.7	79.6	115.3	70.3	66.8
Non-ferrous metals transformation	96.4	101.1	89.5	91.2	82.1
Non-electrical machinery	121.2	55.9	174.5	62.3	72.2
Electrical machinery	114.9	97.2	139.1	68.2	63.7
Transport equipment	149.5	67.4	170.8	64.1	75.2
Total manufacturing	105.7	95.1	124.1	91.4	86.2

(a) Estimate

Source: Instituto Nacional de Estadística: Oferta y Demanda Global 1990. Lima, May 1991.

Table 6 Balance of payments, million US dollars

Transactions	1980	1985	1987	1989
I. Merchandise and services 1. Exports	3916	2978	2661	3542
Minerals	1795	1205	1219	1576
Petroleum and derivatives	792	645	274	217
Agricultural	297	318	262	354
Fish	312	242	325	533
Textiles	224	244	255	351
2. Imports	-3090	-1806	-3182	-2140
A. Trade balance (1+2)	826	1172	-521	1402
3. Financial services	-909	-1011	-714	-649
4. Non-financial services	-166	-170	-422	-386
B. Service balance	-1075	-1181	-1136	-1035
C. Transfer payments	147	134	180	155
D. Current account balance (A+B+C)	-102	125	-1477	522
II. Capital 5. Public	371	814	679	637
6. Private	92	-123	88	85
E. Long-term capital (5+6)	463	691	767	722
F. Short-term capital	361	-536	-75	-381
III. Net balance of payments (D+E+F)	722	280	-785	863

Source: Instituto Nacional de Estadística: Perú: Compendio Estadístico 1989-1990, Lima, September 1990
Banco Central de reserva del Perú: Memoria 1989

Table 7 Merchandise imports, value in million US dollars and percentage shares

	1980 value	1980 per cent	1985 value	1985 per cent	1989 value	1989 per cent
Consumer goods	362.7	14.1	171.6	10.8	235.3	13.0
Durables	93.0	3.6	50.8	3.2	23.3	1.3
Non-durables	269.7	10.5	120.8	7.6	212.0	11.7
Raw materials and intermediate products	1148.5	44.6	773.6	48.7	911.1	50.4
Fuels and lubricants	48.6	1.9	31.0	2.0	155.2	8.6
For agriculture	116.9	4.5	39.8	2.5	49.7	2.7
For industry	983.0	38.2	702.8	44.3	706.2	39.1
Capital goods	1062.2	41.3	638.1	40.2	638.0	35.3
Construction materials	70.6	2.7	52.7	3.3	42.4	2.3
For agriculture	53.8	2.1	15.3	1.0	40.0	2.2
For industry	621.7	24.2	409.7	25.8	356.9	19.7
Transport equipment	316.1	12.3	160.4	10.1	198.7	11.0
Other goods	..	0.0	4.5	0.3	23.7	1.3
Total	2573.4	100	1587.8	100	1808.1	100

Source: Instituto Nacional de Estadística: Perú: Compendio Estadístico 1989-1990, Lima, September 1990

Table 8 Price indices for traditional exports and for imports, terms of trade 1980-1989 (1978=100)

Year	Traditional exports	Imports	Terms of trade
1980	189.5	124.2	152.5
1981	160.4	128.4	124.9
1982	133.0	129.1	103.0
1983	146.0	132.0	110.6
1984	134.6	133.3	100.9
1985	118.2	130.5	90.6
1986	101.4	152.7	66.4
1987	112.5	168.2	66.9
1988	133.3	178.0	74.9
1989	131.7	179.4	73.4

Sources: Banco Central de Reserva del Perú: Memoria 1989

Annex 3

List of persons interviewed in Lima, 9 - 18 April and 5 - 10 October 1991

Ministerio de Energía y Minas

Mr. José Luna Bazo, Vice Minister, Secretary-General
Mr. Oscar Bernuy Verand, Director General Mines
Mr. José Benzaquen, First Secretary
Mr. Delfín Cárdenas, Director of Planning
Ms. Esther Agreda Díaz, Sub-Directorate for Mineral Exports
Mr. Miguel Imañe
Mr. Adolfo Horna

Ministerio de Economía y Finanzas

Mr. Marco Chavez Alvarado, Director General, Economic Affairs
Mr. Carlos Valderon, Directorate General for Economic Affairs

Ministerio de Relaciones Exteriores

Mr. Efraín Saavedra Barrera, Minister Counsellor, Director, Multi-Sectorial Economic Negotiations
Ms. Roxana Castro, Commodities Division

Ministerio de Industria, Comercio, Turismo e Integración

Mr. Sergio Montero, Director, International Relations

Banco Central de Reserva

Ms. Gladys Choy, Manager, Economic Research
Mr. Jorge Morales, Directorate General of Economic Studies
Mr. Pedro Tuesta

Instituto Nacional de Planificación

Ms. Carmen López Cisneros, Directorate General of Planning

Instituto Nacional de Estadística e Informática

Mr. Aurelio Valdéz Caro, Director, National Accounts
Mr. Saul García

Instituto de Comercio Exterior

Ms. Liliana Honorio, Manager, International Negotiations, and colleagues

Instituto Geológico Minero y Metalúrgico

Mr. Rafael Del Aguila Del Aguila, Executive Director
Mr. David Córdova, Deputy Director

Mr. Oscar Palacios, Director General, Geology
Mr. Yori Carrasco, Director, Technical Cooperation
Mr. Francisco Herrera, Director, Informatics

Sociedad Nacional de Minería y Petróleo

Mr. Eduardo Llosa Barber

Minero Perú

Mr. Juan Carlos Barcellos Milla, President
Mr. Hirota Tanaka
Mr. Víctor Pastor Talleda
Mr. Ramos Lava

Centromin

Mr. Luis Bravo, Co-ordinator
Mr. Felipe Barbarena, Co-ordinator, Planning
Mr. Carlos Martinez
Ms. Margarita Mondragón

Hierro Perú

Mr. Jorge Lanza Villacorta, General Manager
Mr. Amador Unzueca, Chief, Projects
Mr. Luis Ramírez, Technical Manager
Mr. Frederico Oviedo
Mr. Carlos Alvaro

Minpeco

Mr. Pedro Menendez, General Manager
Mr. Angel Baez, Manager, Corporate Planning
Ms. Gloria Burga, Director, Marketing
Ms. Carmen Chumaceros, Assistant, Marketing

Southern Peru Copper Corporation

Mr. John Youle, Vice President, Institutional Relations
Mr. Luis Echevarría Silva Santisteban, Legal Director
Mr. Alfredo de Olazábal, Director, Institutional Relations
Mr. José García García, Special Projects Engineer

Compañia Minas Condestable

Mr. Luis A. Palacios, General Manager

Grupo de Análisis para el Desarrollo

Mr. Alberto Pasco-Font